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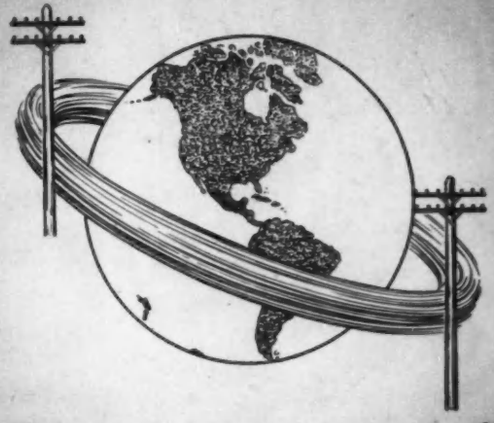
THE NATIONAL TELEPHONE MAGAZINE

TELEPHONE ENGINEER AND Management



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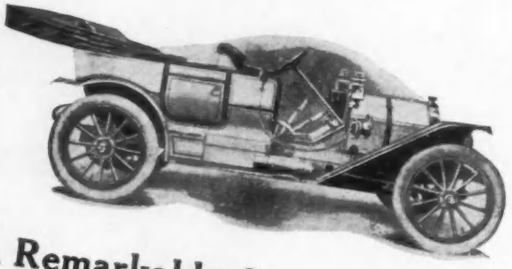
JUNE 1943



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Please forward literature concerning your Model 19 and advise where I can have a demonstration should I desire it.
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Automobile

Way back in 1909 when HAYNES was a popular car LEICH was making Quality Telephone Equipment . . . . and still is!

With this issue we are greeting a large number of new readers of our publication. It is particularly pleasing to the writer to see the operating companies subscribing for groups of their employees that they might enroll in our TELEPHONE ENGINEER Training Course on Electrical Fundamentals that started in the May issue. The number of those already submitting their examinations lead us to believe you readers like these refresher courses. Your letters of comment will be appreciated.

▼

We enjoyed our recent trip to Syracuse, N. Y. to attend the state association convention there. Many of the old timers I did not know personally came up and introduced themselves as friends of our late Dad who always made the New York convention a "must" on his schedule. Each convention we attend brings home to us more and more the job the manufacturers are doing in assisting the telephone companies in their wartime operations.

▼

We regret we will not be in attendance at the West Coast conventions. We do appreciate the kind invitations and hoped up to the last minute we could be there. We are expecting Leslie Gritten and Chas. F. Mason to send us pictures and the convention reports.

Ray

TELEPHONE ENGINEER

MANAGEMENT · ENGINEERING · MAINTENANCE

& MANAGEMENT

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RAY W. SMITH, Editor—ROY F. SMITH, Advertising Manager
DON C. SORENSEN, Sales Promotion Mgr.
M. T. GRIFFIN, Circ. Mgr.—DOROTHY HOLMES, Prod. Mgr.
BETTY J. GRAY—Editorial Assistant

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Buy to Last and *Save to Win* is a vital policy today. It's another step in winning the war . . . and pays dividends in extra use from all equipment.

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These rules of battery conservation help Save to Win

1. Keep adding approved water at regular intervals. Most local water is safe. Ask us if yours is safe.
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3. Keep the battery fully charged—but avoid excessive over-charge. A storage battery will last longer when charged at its proper voltage.
4. Record water additions, voltage, and gravity readings. Don't trust your memory. Write down a complete record of your battery's life history. Compare readings.

If you wish more detailed information, or have a special battery maintenance problem, don't hesitate to write to Exide. We want you to get the long-life built into every Exide Battery. Ask for booklet Form 3225.

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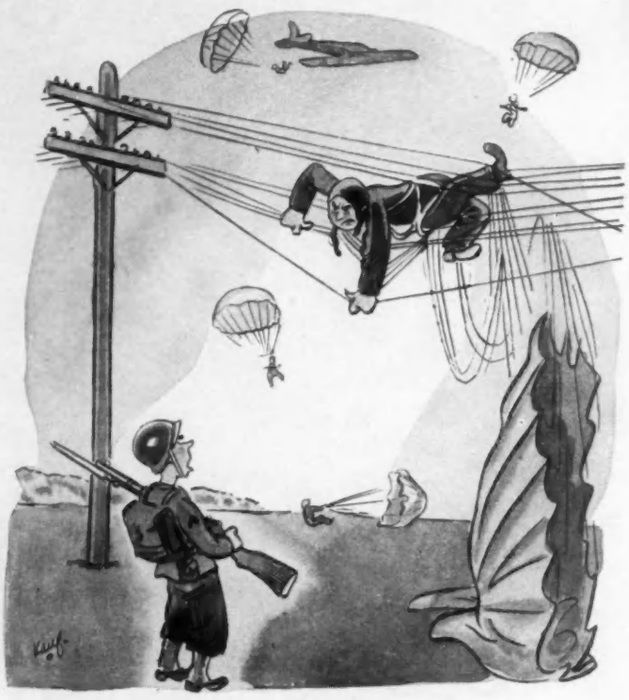

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25 YEARS AGO THIS MONTH

Taken from TELEPHONE ENGINEER files of June, 1918.

In June, 1918 the board of directors of the Texas Independent Telephone Association met in Dallas and authorized officers of the association to offer their assistance to Brigadier General R. H. McDill in organizing a Signal Service Corps for his brigade of the new Texas National Guard. Those attending the meeting were R. B. Still, Tyler, president; E. C. Blomeyer, Waco, secretary; E. M. Powell, Dallas, treasurer; J. Y. Rust, San Angelo; C. D. Longserre, Bardwell; J. A. Smith, Fort Worth (our Dad) and John A. Stratton, Dallas.

★

Twenty-five years ago, in the presence of more than 1,000 scientists, Colonel John J. Carty of the U. S. Army Signal Corps and chief engineer of the American Tel. & Tel. Co. was awarded the Edison medal in recognition of his work in developing telephone engineering.

★

Fred J. Heavens (now sales manager of the Lorain Products Corp., Lorain, Ohio) presided over the 38th quarterly meeting of the Western Pennsylvania Independent Telephone Association 25 years ago this month. Subject under general discussion at the meeting was the necessity of increasing rates and probability of opposition to the increase.

★

At a meeting of the stockholders of the Lafayette (Ind.) Telephone Company held in June, 1918, ninety-two percent of them voted to buy the Central Union Telephone Company's holdings in Lafayette. According to F. D. Cuppy, manager of the Lafayette company, this meant that the two companies would merge as far as local conditions were concerned.

★

The United States Independent Telephone Association announced the program of their 1918 War Conference. Speakers included Association President G. W. Robinson and Vice President F. B. MacKinnon.

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by

ROLAND C. DAVIES
Editor, Telecommunications Reports

Shortage of Instruments

THE most important problem confronting the telephone industry in Washington at present is what course will be charted by the governmental authorities, chiefly the War Production Board, in regard to the threatened exhaustion of telephone instruments that may come any time between August and November.

The rate of growth in telephone installations during the first four months of 1943 ate deeply into the existing stockpile of telephone instruments—all kinds, handset and desk stand—and the Bell System and Independent industry called the attention of the governmental officials to the spectre of a complete exhaustion of the supply in a few months. The problem was discussed and studied as a major topic at the recent June 9 meeting of the Telephone Operating Industry Advisory Committee with the WPB Communications Division and its Director Leighton H. Peebles and on the next day by the Telephone Manufacturers' Advisory Committee, as it had been during two previous sessions in April and May.

Remedy

WHAT remedy will be evolved by the WPB leadership remains to be decided. The various methods to cure the dilemma were presented to the WPB Communications Division in a joint letter by vice president Keith S. McHugh of the American Telephone and Telegraph Co. and president John R. Porter of the United States Independent Telephone Association who heads the Carolina Telephone & Telegraph Co. The two leading telephone industry spokesmen felt that the resumption of limited manufacturing of telephone instruments would be a most feasible step and one which the telephone industry deserved because it was actually turning back to the nation's war production stockpile more copper through salvage than it had been allotted—the Bell System which has been allocated 6,800 tons of the "red metal" for 1943 is returning to the national stockpile a total of 10,000 tons of scrap copper and the Independents have likewise cooperated in a similar effort. It is felt that the resumption of manufacturing of sets, about 650,000 sets for the Bell System and 150,000 for the Independent industry, would solve the situation. The two industry executives were opposed to any plan of compulsory government confiscation of civilian residential sets and believed a voluntary campaign and plea to telephone subscribers to relinquish their extension instruments would only produce limited results. If manufacturing resumption is refused, the next best step would be to rely on disconnected instruments to furnish the supply for essential Schedule A users and to place all non-essential civilian applicants for service on a waiting list.

Government's Ideas

IN governmental circles there was a divergency of views. The Board of War Communications had reached no final decision at time of this writing but did incline to having a testing of the voluntary appeal plan to subscribers as well as canvass of the number of government telephones themselves. The WPB Office of Civilian Requirements was understood to support a resumption of manufacturing of the instruments with the realization of the tremendous service importance to civilians during these days of gasoline and other rationing. Director J. A. Krug of the Office of War Utilities was represented as favoring the voluntary reclaiming of sets and possibly a governmental order recalling back into a national stockpile of extension residential instruments. The WPB Copper and Steel authorities were said to feel the demands of those critical metals by the armed services pretty much precluded any further diversion of them for civilian use.

Surplus Materials

MEANWHILE, WPB Communications Division Director Peebles is having the two quarterly inventory reports from the telephone operating companies correlated and tabulated into catalogues of available surplus stocks to be made available to the telephone manufacturing companies and suppliers. The latter are to become the clearing houses and sales agencies for telephone companies respectively to sell and purchase apparatus and parts from surplus stocks where the latter are available. The farsighted plan of Mr. Peebles of providing exchanges of surplus apparatus and parts between telephone companies in the same geographical areas is expected to be of great assistance and benefit to the industry.

The Washington Scene

FAR behind the armed forces—the Army and Navy—and the nation's war production industries, Washington

Distinguished visitors at the recent New York State convention were (L. to R.) Howard O. Leinard, Cleveland, F. T. McNamara, WPB, Washington and B. C. Burden, USITA, Washington. Executive secretary Arch R. MacKinnon at right.

is now settling down to the prosecution of the war at full speed.

The most important developments have been the planning by President Roosevelt and Prime Minister Churchill of the coming offensive with the leading American and British Army and Naval leaders. Despite the slurs of a certain type of newspaper columnist and from some publicity-seeking members of Congress and officials in the Federal agencies the work and results of the United States Army and Navy appear definitely to have confounded the mouthings of these armchair strategists.

Nearly every Government agency is pretty generally now slanted towards the full prosecution of the war—there are a few spots where New Dealers are keeping up their feuding and conniving for greater power and more room in the spotlight and unfortunately, some of the inner White House "palace guard" are aiding and abetting the activities of this category of government officials. But, on the other hand, a number of New Dealers have become most valuable and important cogs in the war machine and have thrown their entire effort without personal ambitions into the task of winning the war—an outstanding example is Office of War Utilities Director "Cap" Krug. It is the group of left-wingers—the boys who are long on theorizing but short on accomplishments—who are going by the board as Malcolm Cowley, who himself quit in a huff the OWI, bemoaned in a recent issue of the New Republic.

Army-Navy

WHAT the New Dealers and the left-wingers have not yet realized is that the members of the armed services in this war are of a much higher degree of intelligence than in World War I and have been receiving the finest sort of training from the Army and Navy. The soldiers and sailors are watching developments in Washington and they get aroused over the failures — this has been particularly true in regard to the coddling of labor and the permitting of strikes. Incidentally, the telephone industry, like all American business, must recognize the value of the training of the man in the armed services and use the men when they are demobilized to the best of their ability. This is especially true in the case of commissioned officers notably those who have received commissions from the ranks because of the Army's efforts to determine leadership qualities, and for technicians. These men are definitely the reservior for executive and managerial positions in the industry.

J. A. Krug, Director, Office of War Utilities. (See Col. 1).

Developments

DEVELOPMENTS in Washington which the telephone industry must watch carefully include the following:

1. **The Fourth Term** — President Roosevelt certainly is far out in front on that issue although there is considerable feeling that a Republican House might occur in 1944. The recent bill in the Senate to have a constitutional amendment limiting a President to two terms which is receiving strong backing from Democrats and Republicans might stimulate opposition to a fourth term as the measure is given more and more publicity.

2. **The American Beveridge plan**— The legislation, sponsored by Senator Wagner of New York and other Democratic Senate leaders on the Administration side, would broaden the Social Security coverage of employees tremendously and would embody a number of recommendations for the rehabilitation of this war's veterans back into private life. This measure should be given careful study by the telephone industry's leadership.

Convention Dates

Washington and Oregon Independent Telephone Associations, joint convention, Davenport Hotel, Spokane, Wash., June 18 and 19.

California Independent Telephone Association, Miramar Hotel, Santa Monica, June 24 and 25.

3. **Tax Bill** — Corporation taxes seem certain to be increased but the legislation will not probably be launched under way until after the summer recess of Congress. The outlook is for a combined corporation normal and surtax rate up to 45 per cent of net taxable income. The Senate Finance Committee recently again gave its endorsement of the Bell System Pension Plan (after which a number of Independent company plans are modeled) as a type of trust exempt from taxation.

Politics

THE FCC and the House are still keeping up a tussle with the chief bone of contention over the propriety of Rep. Cox of Georgia heading the special House investigation committee because of the latter having allegedly received $2,500 for a legal fee in aiding a broadcasting station before the Commission. FCC Commissioner Clifford J. Durr has been asking Speaker Rayburn and the House Judiciary Committee to consider the removal of Rep. Cox from the helm of the committee but so far his charges had been shelved despite some vigorous support of Mr. Durr by several metropolitan newspapers.

Speculation has arisen that FCC Chairman James Lawrence Fly might be elevated from the Commission chieftainship to the vacancy on the Federal Circuit Court of Appeals in the District of Columbia in the place of Judge Vinson, the new Economic Stabilization Director. However, if and when this would happen—and this absolutely no basis for the speculation other than the usual gossip and rumoring in Washington—, it would not likely until fall, it is believed. Another member of the FCC is up for reappointment — Commissioner George Henry Payne, New York Republican, and, while he has some strong opposition from his own party, it is believed his chances of renomination are fairly good as he is now in charge of the FCC committee handling the Telegraph Merger.

Telegraph Merger

THE most important proceeding in the offing at the FCC will be the hearings to commence July 7 on the application of Western Union to acquire the Postal Telegraph.

Besides the milestone in communications history of establishing a single telegraph system in the United States, the telephone industry's direct interest —the future transfer of the A.T. & T.'s leased wire and teletypewriter exchange services to the merged tele-

graph company—will not materialize, it is now planned, until the Western Union-Postal Telegraph consolidation is consummated.

Of significance to the telephone industry in connection with the merger situation—and particularly to the Independent industry—are the two wage increase cases. One was the granting of a very substantial increase of pay to Postal Telegraph employees on the basis of substandard wage levels at present which means a retroactive wage boost of $2,000,000 and an added monthly wage increased expense of $250,000 a month. The other is a pending wage dispute case now before the War Labor Board on a nation-wide basis against Western Union which would increase that system's annual wage costs by over $8,000,000 and would practically absorb all of its net earnings. The ray of sunshine to alleviate these increased wage costs for Western Union and Postal Telegraph is the renewed proposal of the telegraph companies to have the Government telegraph rate (now 60 per cent of commercial rates) increased to the 100% level of the public rates. The FCC is starting a hearing on this issue June 16 and has indicated its willingness to increase rates to a 75% level.

The War Labor Board's ruling on Postal Telegraph wages as substandard is a development that is of important interest to Independent telephone companies. The WLB is apparently scrutinizing wage levels of Independent companies as wage disputes are brought before it with extreme care. It held recently in the case of two exchanges of the Indiana Associated Telephone Co. that operators' wages were substandard and must be substantially increased to a starting rate of 40 cents an hour.

Manpower Front

PROCEDURES on appeals machinery under employment stabilization plans, 48-hour week directives, and other national manpower regulations have been established under War Manpower Commission Regulation No. 5. While the new procedures are not applicable to selective service appeals, they govern the rights of appeal of not only workers and employers and their organizations, but other persons and organizations who claim to be prejudiced by WMC action.

Under the new regulation an employer may appeal whenever the WMC:

(1) Refuses to refer to him, or to consent to his hiring, a worker or workers if, under an applicable War Manpower Commission order, regulation or other direction, he may hire such worker or workers only upon referral by, or with the consent of the War Manpower Commission; or (2) issues a statement of availability to any of his workers; or (3) requires him to release, or refuses to permit him to release, any workers; or (4) requires him to extend the work-week of any of his workers; or (5) determines that he is violating, or has violated any provisions of any order, regulation, or other direction of the War Manpower Commission.

A worker has the right to appeal whenever the WMC:

(1) Refuses to refer him to, or consent to his being hired for, employment in which, under an applicable War Manpower Commission order, regulation or other direction, he may be hired only upon referral by, or with the consent of, the War Manpower Commission; or (2) refuses to issue to him a statement of availability; or (3) requires or permits his employer to release him under a War Manpower Commission policy, regulation or other direction; or (4) determines that he is violating, or has violated any provision of any order, regulation or other direction of the War Manpower Commission.

Employers and workers may direct their appeals to the Area Labor-Management Committee, but if no such committee exists, then to an Area Appeals Committee made up of an equal number of representatives of management and labor selected from a panel chosen by the Regional Management-Labor War Manpower Committee. Final appeal may be made to the Chairman of the War Manpower Commission.

Gasoline and Tires

TRUCKS used in the maintenance and repair of telephone plant and operations throughout the Eastern gasoline shortage area have been assured by the Office of Defense Transportation of supplemental gasoline rations under a new priority system designed to provide for the continuance of essential automotive transportation. Telephone systems, together with other communications companies, including broadcasting, radio and telegraph, have been classified under Schedule "A" for preferential treatment in the furnishing of truck services for the basic maintenance and services of the industry. At the same time, the Office of Price Administration has amended Ration Order 5C establishing a new procedure affecting companies using bulk gasoline in quantities of 960 gallons or more per month, which involves the use of "gasoline deposit certificates" issued to users of bulk gasoline by rationing boards. To effect the transfer of bulk gasoline from a distributor, these certificates may be deposited in a "ration bank account" and "checks" may be drawn against the account by the bulk user. The new regulation is contained in Amendment No. 50. Meanwhile, Amendment 25 to tire ration Order 1A qualifies fleet and other passenger automobiles operating more than 240 miles per month for Grade I tires. The Amendment also redesignates Grade I tires to include the lower quality tires formerly grouped under Grade II.

West Coast Conventions

Independent telephone men on the West Coast will find it to their advantage to attend either the joint meeting of the Washington-Oregon convention on June 18 and 19 at Spokane, Wash. or the California convention at Santa Monica on June 24 and 25.

Comments heard at the various state association conventions lead us to suggest your attendance because of the many wartime necessities that must be observed in running a telephone exchange at this time. There will be competent speakers at each convention to unravel the many questions you might have on proper procedure at this time. To win this war we must render more service with less material and the addresses you will hear at the conventions will tell you how.

Telephone Jobs Are Essential—Olmstead

Appearing on the Bell System "Telephone Hour" radio program May 24, Major General Dawson Olmstead, Chief Signal Officer of the Army, told telephone men and women that they are an essential part of America's communications system and are rendering vital service to their country in war time.

"The jobs you do are all vital, the telephone system—like the Army—needs many different skills to keep its complex organization running smoothly and efficiently," General Olmstead said. He referred to communications as an essential instrument in trained hands that know how to keep it fighting for victory.

Complete Victory... it is coming ... and with it a nation vibrant and warm again ... a world returned to sanity and security with a peace, we pray to God, that will last forever and a day. 'Til that Victory we must carry on ... we must continue to buy bonds ... salvage scrap ... conserve manpower ... support the blood banks ... abide rationing restrictions ... and above all, have faith in our Government and in our God.

Registration desk at New York convention. (L. to R.), Margaret Pfohl, N. Y. Tel. Co., Francis Norton, of John C. Larkin & Co., Jane Kowalski, of the association, H. M. Day, Syracuse, R. B. Wiseman and H. C. Ryon, North Electric Co., A. R. MacKinnon, Ted Weston and A. H. Appelby, Jamestown.

Charles N. Foote, Wallingford, Vt. (left) and Merrick E. Wheeler, Springfield, Vt. (center) past president and president respectively of the Vermont Association, pose for the TELEPHONE ENGINEER camera with Garland B. Foscue, Chicago, chairman state association co-ordinating committee of USITA.

New York

CONVENTION REPORT

By RAY W. SMITH, Editor

THE 41st annual convention of the New York State Telephone Association was held in Syracuse on May 26 and 27. Attending was the largest telephone group in representation of different companies ever assembled for this annual affair. A two-day general program augmented with Conference Rooms on important subjects held the attention of New York telephone men and many visiting notables of the industry.

Officials of the association received much favorable publicity in newspapers throughout the nation when their programs were issued stating there would be "Strictly Business—No Fun—No Exhibits—No Banquet—No Dance—No Golf—No Wine—No Women—No Song." Most of these were observed although it was found impossible to limit an old-time group of telephone men from forming a number of "barber shop quartets." Despite the limitation of a 2-day instead of 3-day convention those in attendance were outspoken on the value of the meeting and the ground covered in the time allowed.

ALL officers of the association were re-elected for the coming convention year. Louis H. Meyer, vice president of the Upstate Telephone Corp., Johnstown, is president; William A. Seely, president of the Chenango and Unadilla Tel. Corp. is vice president; A. R. MacKinnon is executive secretary; Edwin B. Babeaux, Johnstown, is treasurer; and Erwin A. Adams is secretary and asst. treasurer.

Eleven directors were elected. J. P. Boylan, Rochester; Frank D. Fancher, Middletown; C. T. Weston, Port Byron; Louis H. Meyer; W. A. Seely, and Lloyd C. Wright were those re-elected. Those newly elected are: Carl E. Purple, Greene; Don Todd, Edwards; E. L. Sproul, Dundee; S. F. Nixon,

Immediately following director's meeting of the New York State Telephone Association the TELEPHONE ENGINEER camera was on the job. Seated, (L. to R.), A. R. MacKinnon, executive secretary, William A. Seely, vice president, Louis H. Meyer, president, Edwin B. Babeaux, treasurer, and Erwin A. Adams, secretary. The directors are, standing, (L. to R.), Don T. Todd, John P. Boylan, L. C. Foss, C. T. Weston, Lloyd C. Wright, Carl E. Purple, Fred S. Florance, Russell Deyo, Sam F. Nixon, H. H. Griswold and E. L. Sproul.

A group just arriving for the New York Association sessions. Automatic Electric's H. C. Smith, Cleveland, is the surprised chap with the handkerchief.

Westfield, and Fred S. Florence, Monroe, N. Y.

A popular feature of the meeting were the Foxhole Conferences No. 1, 2 and 3, In the No. 1 Conference Priorities, Manpower, Cadres, Wage-Hours, etc. were the subjects. At Conference No. 2 all plant problems were discussed and in Conference No. 3 Toll Compensation, Taxes, OPA, Accounting and Commissions were the topics of conversation. These conferences were in session before, during and after general sessions. Out-of-state and local experts were in attendance to assist.

The program started with the report of the Nominating Committee Chairmaned by Don F. Davison. Election of directors followed immediately. Mr. Babeaux then read the treasurer's report showing the association to be in good financial shape.

Executive Secretary Arch MacKinnon in his report outlined the growth of the New York association through its past history. He reported on the various district meetings of the past year and mentioned that it was proposed that group meetings be held hereafter at 10 different points in the state. In commenting on the present telephone picture Mr. MacKinnon said:

"The present telephone picture is a national picture rather than a state picture for during this war time, control of our operations and methods has been assumed by the Federal Government and its war agencies, due to the fact that we are an essential war industry. The State commissions have been forced by the war to take a less important part so as to cooperate in the war effort. The result of this arrangement has been that our problems this past year have been national problems rather than state problems, in spite of the fact that practically none of our member and non-member companies come under the jurisdiction of the Federal Communication Commission. This has meant that our work with the National Association has been very close in order to assist them in dealing with Federal agencies. This relationship will continue for the duration. What will happen to change this picture after the war will remain to be seen. Perhaps these Federal bureaus may decide to continue their voting employees by continuing their supervision of our operations. We hope not, but we must remember that it is hard to get rid of governmental activities once they are created."

Garland B. Foscue, Chicago, chairman of the State Association Coordinating Committee of the United States Independent Telephone Association (USITA) outlined the work of his committee and reported on its activities. He has attended every state association convention held during 1943 and his committee has a very envious record to date.

Mr. Pete C. Gallivan, connecting company agent of the New York Telephone Co. had, as the final speaker for the first session, the subject "The New Toll Compensation" in which he explained a portion of what the new increase would be when the details were ready for contract. His address was extemporaneous and part of it consisted of a question and answer period.

THE afternoon session started promptly with president L. H. Meyer again presiding. J. F. Morrison, chief deputy of the Regional Director of the Wage-Hour Division, U. S. Dep't of Labor pinch-hitted for his chieftain Arthur J. White. He explained in great detail all parts of the present Wage-Hour laws having to do with telephone companies and completed his dissertation with an Open Forum for questions.

Louis H. Meyer, Johnstown, who was re-elected president of the New York Telephone Association, poses with one of the new directors, S. F. Nixon of Westfield, N. Y.

Francis T. McNamara, deputy director under Leighton H. Peebles director of the Communications Branch, WPB traveled from Washington to acquaint the New York association membership on all details of the U-2, U-3 and U-5 Orders now in effect. He also warned the industry of the impending shortage of telephone instruments of which readers of this publication are already familiar. Mr. McNamara mentioned this publication while speaking of the trade press of the industry and advised his hearers of the value of both publications serving the industry.

An out-of-the-industry speaker, Colonel Alan G. Goldsmith, vice president of the Mead Corporation, New York, was the last to address the opening day convention delegates. His subject "What are we Defending" was very ably handled. In part he said:

"Today, we are facing the facts. Most of us have loved ones in uniform. We see complete industries which have been converted from peacetime to wartime production. Each one of us has been effected in his own person by our tremendous armament program. However, not only the knowledge of overwhelming production of planes, tanks, ships and guns is effecting our lives. This tremendous war effort is the result not a cause. It is a spontaneous driving effort of the American people to destroy once and for all a system which would engulf and enslave us. What are we defending? Our industry? Yes! Our agriculture? Yes! Our business? Yes! But much more important is our right to worship God as we please, to publish and read newspapers without censorship, to vote as we please, to do all these things which have become famous as the American way of life."

During the evening of opening day a series of interesting war pictures were shown with director H. H. Griswold, Phelps, N. Y. presiding. A representative gathering saw "Attack Signal" and "Combat Report," both 15 minute films and "At the Front" which was a 45 minute film.

On the second day activities were started at 7:45 a. m. when the directors held their meeting to elect officers at their annual Breakfast and Annual Meeting. Your editor took pictures of these officials immediately afterward and is reproducing them in this issue.

THE morning session was called the Plant Session with vice president W. C. Seely presiding.

C. Ted Weston, general manager of the Port Byron (N. Y.) Telephone Company, delivered the first address on "Present Maintenance and Future Dial." Mr. Weston prefaced his remarks with a short outline of the importance of thinking for the future and advised his audience that a complete checkover for future service was definitely needed now. To those that were not sure that conversion to better equipment was economical he advised they consult their manufacturers immediately. He also mentioned the necessity of surveying for future location of central offices.

In discussing outside plant for postwar use he outlined several steps he considered necessary. They are:

"1. Survey all lines, both rural and town, including toll lines, to determine what will ultimately be necessary, from a construction and re-locating standpoint, to put them in A-I operating shape for the proposed service.

"2. Using this survey, study the changes considered necessary. By so doing it will be possible to determine what must be definitely put aside until present material restrictions are lifted.

"3. Where line extensions are to be carried out, as presently allowed by Government orders, they should be so designed that replacement will not be required when conversion is finally effected. This applies to those instances where grounded operation is now practiced.

"4. Repairs to plant necessitated by storm damage, should be carried out on a predetermined requirement schedule. Poles, cross arms, etc., should be of sufficient class and size to accommodate ultimate loads that will be required by metalicizing."

B. C. Burden, engineer of the USITA, Washington, had as his subject "Operating Plant under WBP Orders." Constant readers of TELEPHONE ENGINEER are familiar with most of the details necessary to do this by their familiarity with Bulletins released by the National Association and reproduced in this magazine. Mr. Burden held an Open Forum for questions after his address and was very busy in the Foxhole Conferences during the entire meeting. He brought greetings from officials of the USITA to the convention.

K. T. Dutschmann, general plant supervisor of The New York Telephone Co., Albany, had as his subject "Saving Materials and Equipment." He gave a number of examples of conservations as practiced in the Bell System. His first item which had to do with making the greatest use of what was available into increasing the extent of use of existing facilities prolonging the life for the plant and using recovered material are given herewith as a general heading of some examples:

"Saving of old desk stands.
Decreasing left-in stations.
Reusing cable removed from plant.
Repairing recovered drop wire.
Repairing recovered open wire (copper).
Reusing short lengths of distributing frame wire.
Reusing pole line hardware.
Saving solder from old joints.
Repairing cable terminals.
Reducing car mileage.
Repairing station cords using acetate cloth tape and restoring appearance by immersing in brown lacquer.
Use of toll operating desks in place of additional toll sections.
Etc."

Mr. Dutschmann gave many more examples of what could be done which space does not allow us to enumerate.

Copperweld's R. A. Sovik (center) getting up a luncheon party during the New York convention. Distinguishable are J. C. Purple, Newark Valley, Ted Weston, Port Byron, Ed. F. Davison and Arthur R. Maytum.

THE closing address of the plant session was delivered by Burton A. Harness, general construction supervisor of the Rochester Telephone Corporation. His subject "Controlling Installations to Meet War Conditions" was appropos and well presented. Mr. Harness considered conservation of manpower and materials as the most significant factor to come out of the war and in his address told what his company had done along these lines. He told how they trained employees in their various duties that they might handle installations as well as their other activities. He outlined the use made to effect complete use of available supplies and manpower and the steps necessary. The plans outlined by Mr. Harness have already proven successful and are now in the active use of the Rochester Telephone Corp.

Dr. David Friday, Washington, the eminent economist, is introduced and greeted by New York Association director Lloyd C. Wright, chairman of the closing session.

President Louis H. Meyer delivered the President's address at the closing session with director Lloyd C. Wright presiding. Mr. Meyer gave a history of the association year particularly stressing the personnel shortage because of switches to war industries.

In speaking of conditions Mr. Meyer further stated:

"In spite of these conditions, service rendered generally by the telephone industry in this state, as well as in other states, has been especially good and has won commendation from governmental bodies. I believe this can be attributed to a considerable degree to the loyal and conscientious effort of telephone employees, who, after all, are very essential in good telephone service. Your employees should be informed that telephone communication is an essential industry, and is as necessary to the war activity as is the production of guns, tanks and planes. It should be pointed out to them that they can contribute as much to the war effort and perhaps more because of their special training, by remaining

(Please turn to page 61)

Telephone People Honored For Outstanding Public Service

From a group of 28 men and women telephone workers who were selected for doing individual outstanding "acts of noteworthy public service" during 1942, four persons have been chosen for special honor by the award of silver medals plus cash awards of $500 each. The other 24 persons will receive bronze medals and $100. In addition to the individual awards, two special plaques commemorating acts of public service by groups of Bell System people were awarded. In all cases, the awards were provided by the Theodore N. Vail Memorial Fund, established in 1920 in memory of Mr. Vail, former president of the American Telephone & Telegraph Company.

Those receiving silver awards were Mrs. Jennie Crouse of the Rossville (Ill.) Telephone Company; Miss Lila Wood, Mrs. Evelyn Fujko and Joseph Fujko of the Wisconsin Telephone Company.

Mrs. Crouse, an operator, stayed at her switchboard following a cyclone which roared through the town of Alvin, Illinois, March 16, 1942, and summoned and organized disaster relief for the stricken community.

The three Wisconsin people—two of them operators and the other the manager of the Spring Valley exchange—remained at their posts on the night of September 17 while a rising flood cut off all avenues of escape. Until the telephone office itself was flooded, they sent out advance warnings of rising water by telephone, flashed other towns of the approaching danger, and coordinated emergency aid in their own town. They escaped from the flooded office to the floor above through a hole cut in the ceiling.

The group awards of special plaques were made to telephone operators and plant employees at Honesdale, Pennsylvania, and to the operators at Hawley, Pennsylvania. These men and women responded with courage and initiative in providing emergency telephone service for their communities in May, 1942, when a devastating flood swept across the country, badly crippling public services and doing extensive property damage.

This is the twenty-third year that Vail medals have been awarded for acts of noteworthy public service.

WPB Interprets U-3 and U-4 Order

The War Production Board, in issuing official interpretations of Orders U-3 and U-4, said that ratings and symbols assigned to telephone and telegraph operators by the orders may be used to obtain maintenance, repair and operating supplies for offices, warehouses and other facilities essential to business operations. Text of the WPB interpretations follow:

The following official interpretation is hereby issued with respect to 4502.1. Utilities Order U-3.

"The ratings and symbol assigned by Utilities Order U-3 to telephone operators may be used to obtain maintenance, repair and operating supplies for general office, branch offices, warehouses, and other facilities essential to the conduct of the telephone business."

The following official interpretation is hereby issued with respect to 4503.1 Utilities Order U-4.

"The ratings and symbol assigned by Utilities Order U-4 to telegraph operators may be used to obtain maintenance, repair and operating supplies for general office, branch offices, warehouses, and other facilities essential to the conduct of the telegraph business."

A QUESTION!

By an Independent Telephone Pioneer

Name four of the largest islands of the world in order of size.
(For answer turn to page 38).

Open 1580 Mile Alaska Line

America's longest telephone line, stretching 1,580 miles through uncharted northern wilderness to Whitehorse, Yukon Territory, was put into service May 22.

Already crews are pushing northwestward toward Fairbanks, Alaska, which they expect to reach by Sept. 1. No other line has ever reached this far north or stretched a comparable distance in uncharted and uninhabited country, according to army officials

The line connects with the North American telephone network at Edmonton.

When the line is completed to Fairbanks it will be 2,200 miles long.

Just as

Victory Gardeners have to water their plants if they are to expect a bumper crop . . .

So do

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Magnetism and Magnetic Effects —Electromagnetism

PART II

Magnetic Theory

IN studying electrical theory, one of the first subjects with which we must become familiar is **magnetism**, as virtually all electrical devices and circuits make use of magnetism in one form or another. It was discovered by the ancient Greeks that certain stones possessed the power of attracting small pieces of iron. These stones they named **Lodestones**. They also found that if these Lodestones were placed near or rubbed over pieces of iron that the pieces so rubbed would likewise become imbued with the same force. This **attractive power that one metal may have for another metal is known as magnetism** and metals that are permanently magnetized are known as **magnets.** Iron and steel are the two most common prolific magnetic substances. Nickel exhibits slight magnetic properties but other metals exhibit magnetic properties only slightly, if at all. By combining certain metals as for example nickel, chromium, and iron, magnetic materials of exceptionally good quality can be obtained.

Magnets and Magnetic Poles

MAGNETS are made in various shapes. A familiar type of magnet is that shown in Figure 18. This is known as the simple horseshoe magnet. While it is perfectly feasible to have a straight bar magnet it is of advantage to construct a magnet so that the two **poles** are brought close together, as magnets of this type retain their magnetism longer due to the fact that a **keeper** (a soft iron bar) can be placed across the mag-

Fig. 18—Simple horseshoe magnet (Courtesy Central Scientific Co.)

netic poles, thus providing a good path for the magnetism and enabling the magnet to hold its magnetism longer than would be the case with the straight bar magnet. Magnets are made for commercial purposes by placing them in an intense magnetic field for a few minutes.

It has been found that magnetism is stronger at the extremities of a magnet than in the middle. **The ends of a magnet are therefore termed its poles.** Inasmuch as the two ends of the same magnet do not exhibit like properteis, they have been assigned separate identities by calling one the **north** and the other the **south** pole. Magnetic lines of force are assumed to leave the north and enter the south pole as shown in Fig. 19.

Magnetic Laws

MAGNETS follow laws similar to those governing static charges; i. e. a north magnetic pole of one magnet will

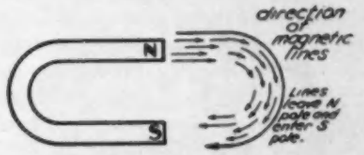

Fig. 19—Direction of magnetic field around poles of magnet

attract the south magnetic pole of another magnet but will repel a north magnetic pole. In other words, **like magnetic poles repel each other and unlike magnetic poles attract each other.** This is shown by Figure 20. This is an important electrical relationship and should not be forgotten.

The magnetic compass makes use of the fact that unlike magnetic charges

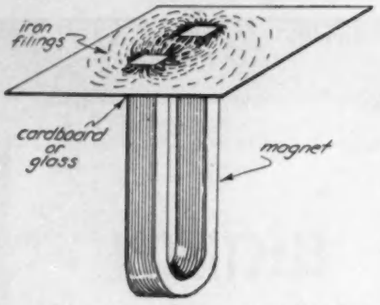

Fig. 19-A—Shape of magnetic field shown by iron filings

attract and like magnetic north and south geographic poles, it will attract the steel needle and charges repel. A compass consists of a magnetized and pivoted steel needle. One end of the needle is a north magnetic pole and the opposite end a south magnetic pole. Due to the fact

Fig. 21—High grade compass

that the earth is a gigantic magnet having pronounced polarity characteristics with a concentration of magnetism near the end of the needle which points to the north geographic pole, is referred to as the **north magnetic pole.** whereas the end of the needle pointing to the south geographic pole is referred to as the **south magnetic pole.** It should be observed that the north geographic pole is in reality a south magnetic pole inasmuch as it attracts the so called north pole of the magnetic needle.

A high grade compass is shown in Fig. 21.

It is interesting to note that it is impossible to have a magnet having only one pole. If a bar magnet is broken into a number of pieces, each piece will still have a north and a south pole.

Theory of Magnetism

THE theory is advanced that the difference between a magnetized iron bar and one that is not magnetized is merely one of molecular arrangement;

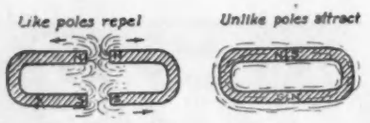

Fig. 20—Action of like and unlike magnetic poles

that is, **in the magnetized bar the iron molecules have all arranged themselves in orderly fashion** (assuming each iron molecule to have a north and south pole), but in the unmagnetized bar the molecules may lie in any position; hence, no magnetic poles would show up at the end of the bar. Figure 22 illustrates this theory.

Fig. 22—Theory of magnetism

Magnetic Induction

ANOTHER interesting effect in connection with magnetism is **magnetic induction.** This effect is shown in Figure 23. When a strong magnet is placed near a soft iron bar, magnetic poles will be induced in the unmagnetized bar due to the proximity of the magnet. This effect is similar to that which occurs in connection with static electricity wherein an electrostatically charged object can induce a charge in another object when brought close.

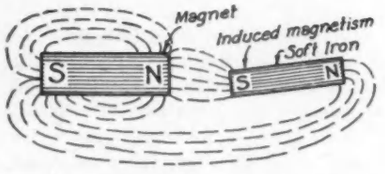

Fig. 23—Action of a permanent magnet on a nearby soft iron bar

No Insulator Against Magnetism

MAGNETISM will pass through wood, glass, nonmagnetic metals, and paper. **There is no insulator against magnetism.** Where it is desired to shield electrical apparatus from the effects of a magnetic field, this is done by interposing an iron sheet or case as shown in Figure 24. This magnetic case tends to conduct the **magnetic lines** away from the object to be shielded by providing a better magnetic path than the path through the air. It is therefore referred to as a **magnetic shield.** Copper or aluminum, though not magnetic materials, will act as magnetic shields

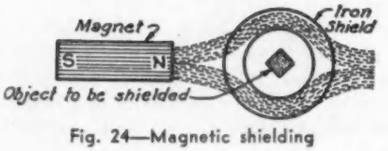

Fig. 24—Magnetic shielding

under certain circumstances but only in connection with magnetic fields created by alternating current. Good examples of magnetic shields are copper or steel cans which are placed around radio coils in modern radio receivers. It is often necessary to shield coils from electrostatic fields and any metallic shield placed around a coil and grounded will shield the coil from electrostatic induction. The magnetic shielding effect that can be obtained with aluminum or copper shields against alternating current fields results from these fields generating (electromagnetically) current in the shields and these currents set up magnetic fields which tend to neutralize the magnetic fields creating them, as shown in Fig. 25.

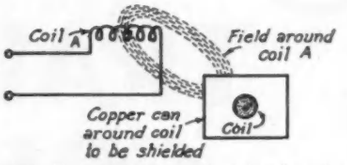

Fig. 25—Non-magnetic material will act as a magnetic shield where interferring field is due to alternating current

Magnetic Force Varies With Distance

MAGNETIC **lines of force** radiate from any magnet. These lines, of course, are invisible and imaginary. However, if we were able to see them we would find that they leave one pole of the magnet and enter the other. For purposes of explanation it has been assumed that **magnetic lines of force leave the north pole and enter the south pole of the magnet.**

Another magnetic law that should be remembered is that **"magnetic force varies inversely as the square of the distance from the magnetizing source."** For this reason, while the magnetic field in the proximity of a magnet may be very strong, it will be much weaker a few inches away from the magnet and as we get more than a few inches away the field is so weak as to be hardly measurable.

In order to be able to design electrical equipment, it was necessary to establish magnetic units and work out data concerning magnets and magnetic coils. Standard formulas are used to compute the number of turns of wire and the number of amperes required to produce magnetic effects.

Permanent Magnets

THERE are two types of magnets, one being the **permanent magnet** which consists of steel, either straight or bent in the shape of a horseshoe, and which has been magnetized by being placed for a short time in a powerful magnetic field. The other is the **electromagnet,** which is described in the next

section. Steel has the ability of retaining its magnetism over a long period of time, after once being magnetized. Soft iron, on the other hand, is readily magnetized but will not retain its magnetism after the magnetizing force is withdrawn.

Permanent magnets are used in telephone receivers, loud speakers, polarized

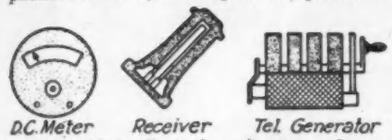

Fig. 25-A—Typical applications of permanent magnets

relays, magnetos, and electrical measuring instruments as well as a host of other uses. Figure 25-A illustrates some of the uses of magnets.

Magnets will hold their charge much longer if the two extremities are bent in such shape as to bring them close together. This is the reason for the familiar horseshoe shape generally employed. If magnets are heated, jarred, or subjected to an alternating current magnetic field, they tend to lose some of their magnetism.

Magnets which are used for experimental purposes will hold their magnetism for a much longer time if a soft iron "keeper" is placed across the two poles when the magnet is not in use.

Our best permanent magnets are made out of **cobalt steel.** Magnets have been made from this material which have been strong enough to result in one bar magnet being able to repel and cause to "float" above it another magnet of the same strength and material.

Early Discovery

MANY years ago experimenters discovered that there was a magnetic field (that is, a magnetic effect) around any conductor carrying an electric current. They also found that this magnetic effect **was always at right angles to the direction of the current which produced it.**

Figure 26 illustrates this magnetic field which exists around any current-carrying wire. This magnetic field can

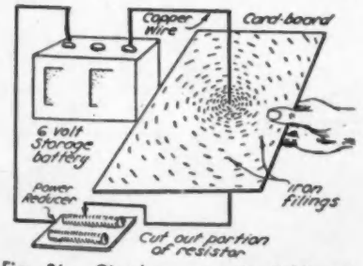

Fig. 26 — Circular magnetic field around current carrying wire

best be thought of as **circular lines of magnetic flux rotating around the wire.** The direction in which these lines rotate, hence their magnetic polarity, is determined by the direction of current flow in the circuit. The direction of rotation of these magnetic lines can be determined by the **right hand rule.** This rule states that **if the thumb of the right hand points in the direction of current flow in a conductor and the fingers are allowed to encircle the conductor, then the tips of the fingers will point in the direction of rotation of the circular lines.** (See Fig. 27.)

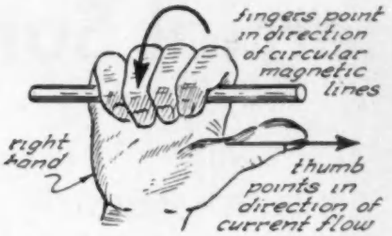

Fig. 27—Right hand rule for determining direction of magnetic lines in straight conductor

Effect on a Compass

IF current from a dry cell or storage battery is passed through a wire and if a compass is then placed near the wire, the compass needle will tend to deflect so as to be at right angles to the current-carrying conductor. The compass needle always turns at right angles, as in this

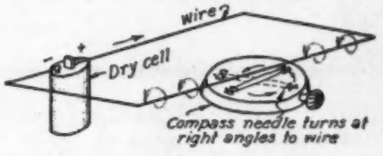

Fig. 28—Effect of circular magnetic lines of force on compass

position the magnetic lines of force can pass through it more readily. Figure 28 illustrates this effect. It should be observed that the lines enter the south pole and leave the north pole of the compass. If the direction of current flow were reversed, the compass needle would reverse its position.

Electric Solenoids

BECAUSE the magnetic effect surrounding a wire which carries current is so weak as to be of little practical use, the ancients found that if they coiled the current-carrying conductor in the form of a solenoid, as shown in Fig. 29, the magnetic lines around each part of the conductor would add to-

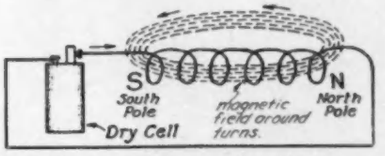

Fig. 29—Increased magnetic effect due to coiling a conductor

gether to form an intense magnetic field **at the extremities of the solenoid.** Thus by coiling the conductor they could produce strong magnetic fields. This was the starting point of the many electrical devices which depend upon the properties of a coiled conductor. Where wire is thus coiled it is referred to as a **solenoid or electromagnet.** If a coil has an iron core it is called an electromagnet, and if it has an air core, it is often referred to as a **solenoid.**

Right Hand Rule

IN a preceding part of this short course we learned that magnetic lines of force radiate or leave the north pole of a permanent magnet and enter the south pole. Now a solenoid or electro-magnet through which current is passed **exhibits magnetic properties is a manner very similar to that of a permanent magnet.** The magnetic polarity of the

Fig. 30—Right hand rule for coils and electro-magnets

ends or extremities of a solenoid can be determined by a simple rule which states as follows:

Grasp the coil with the right hand so that the fingers point in the direction of current flow in the coil; then the thumb will point in the direction of the north pole.

This rule is illustrated in Figure 30 and can readily be checked by approaching the ends of a coil with a compass.

Solenoidal Coils

IF an iron rod is brought near the opening of a coil it will be sucked into the coil. The effect is made use of in certain types of relays. A **relay** is a device which automatically opens or closes electrical circuits by virtue of current flowing in a coil which attracts an iron core or armature which actuates **contacts** on the relay. A relay of the type just mentioned is known as the solenoidal type.

Electromagnets

IRON being a much better magnetic material than air it permits a greater number of lines of magnetic force to pass through it than does a non-magnetic material such as air or wood. For this reason if we place an iron core in the solenoid shown in Figure 29 a much stronger magnetic effect will be produced

(Please turn to page 38)

Thumb-Nail Discussions

★
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Commercial Surveys

By JAY G. MITCHELL

Particular emphasis on post war planning was one of the important subjects at the recent Executive's Conference of the United States Independent Telephone Conference. We consider this article unusually timely to those of you that have your eyes to the future. Here is one of the first steps necessary if you are planning new plant for post-war use.

Reasons For

IN laying out plant for a new telephone office in an existing exchange area, in planning the substitution of cable for open aerial wire in an existing office, in the study of cabling projects to relieve wire congestion and in many other situations involving rearrangements of outside plant it is always advisable to make a preliminary survey of the present and future service demands in the territory affected. In cable planning, particularly, such a survey is one of the first, if not the very first, steps. The quantity of cable, for instance, and the allocation of the total quantity among the different pair capacities should, obviously, be based on the most careful consideration of the requirements of each portion of the territory which the cable is to serve. There is only one way to determine these service requirements for separate areas and that way is followed out by making some form of the commercial survey.

Of course it is possible, and many cable installations have been made on this basis, to proceed with cable construction on a hit and miss basis. When this basis is used for open wire planning deficiencies in available circuit capacity may often be remedied by adding other wire on the pole line. When this basis has been used for the construction of cable plant and deficiencies develope the remedy is more costly. In such cases it may often be found that excessive facilities have been provided for some areas and inadequate facilities for others, the first involving unjustified investment in non-usable plant and the second condition calling for expensive plant expansion under unfavorable conditions. Absolute perfection, of course, can never be attained but the commercial survey will contribute to a more satisfactory result and will insure, except for unforseeable developments, that the investment in new plant is more nearly distributed throughout the areas served in proportion to the service to be supplied them and hence in proportion to the revenue from each one.

Such a commercial survey can be made by any telephone executive without the least difficulty. A few simple primary decisions are required and when they have been made the process involves an interpretation of

(Please turn to page 48)

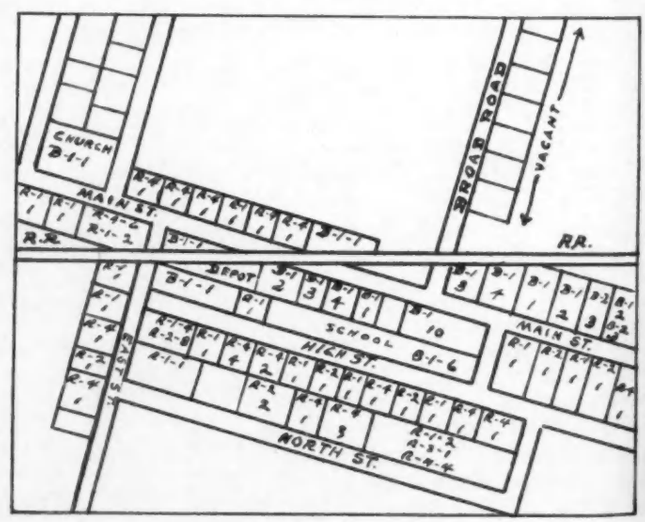

Figure 1

IS THE KEY TO
E REPLACEMENT

But during war there are three extra reasons

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material and manpower. Remember this one
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ELECTRIC

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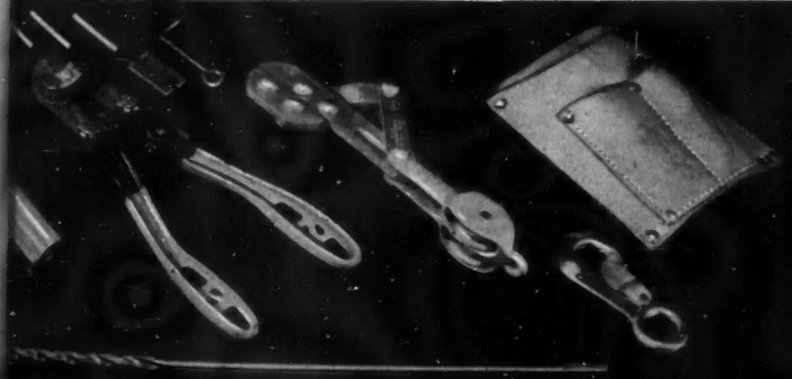

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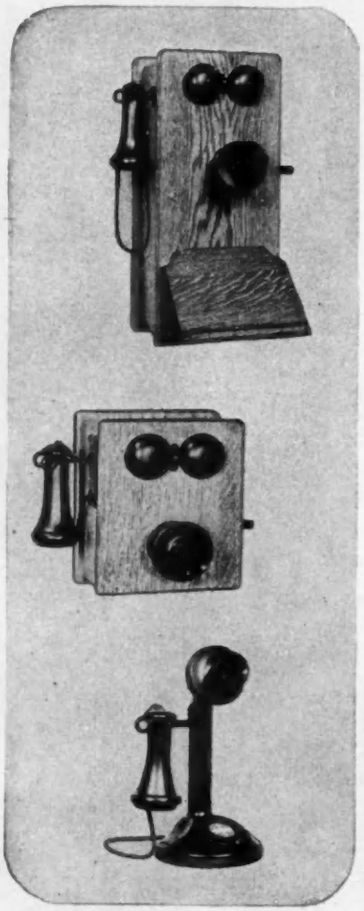
Will Help YOU Win YOUR War, Too!



Salvaging all possible material is an important factor in winning our battles at home — battles against shortages, wear, time, and lack of manpower.

To Independent telephone companies it has still further meaning. Thanks to Autelco Rebuilding service salvaging means you can renew and use that old equipment you had slated for the discard. It means, further, that you can keep your service standards at peacetime levels.

Here's why: Autelco Rebuilding is a unique method of making efficient and smart looking telephones and switchboards from old ones. It means ***much more*** than just repairing; it means rebuilding piece-by-piece—just as equipment is first assembled at the factory—from the ground up. With this treatment, Autelco Rebuilt apparatus ***performs*** like new despite the fact that it uses little or no critical material.

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LETTERS

from TELEPHONE ENGINEER readers

Dear Mr. Smith:

TELEPHONE ENGINEER is good . . . but will be better for me when more specific data on component values is given, all for Carrier Telephone Circuits . . . sufficient information so one with a little understanding of circuits could make up an experimental carrier phone set . . . a two-way job for use on phone lines or Power Line Carrier work.

Is this expecting too great a return from TELEPHONE ENGINEER? To date I have been unable to learn where to get books that do give such information.

I do believe you're too low in your statement on page 10, "Serving the Five Billion Dollar Telephone Industry". This is too low . . . make it at least seven billion.

Sincerely yours,
Hammond Mathews
Silverton, Colorado

◆

Dear Mr. Smith:

I am returning your subscription notice and wish to cancel my subscription of TELEPHONE ENGINEER due to fact that I am retired Railroad Wire Chief and will not have further use for your valuable paper. It has served me well while I was engaged in active service as Wire Chief and I am sorry I have reached the age limit where I cannot consistently subscribe for the future.

Thanks for fine service in past and may you continue your valuable service to others in the future.

Yours truly,
J. M. Duffy,
414 N. 5th St.
Hannibal, Missouri

◆

Dear Mr. Smith:

We have some straight bar permanent magnets which have become weakened to the extent whereas they do not perform their proper function (Permanent Magnets from No. 34A11P1 Gray Paystation).

We would like to put these permanent magnets back to their original state.

Kindly inform me as to the methods which might be employed to do this satisfactorily.

I am enclosing a self-addressed envelope for your reply.

Thanking you for this favor, I remain,

Yours truly,
Wm. C. Brecht
No. 211 Brook Street
Titusville, Pennsylvania

(Ed. Note—Looks like Reader Brecht did a fine job of peeking. An article giving the wanted information was on the press for our next issue when Reader Brecht's letter arrived.

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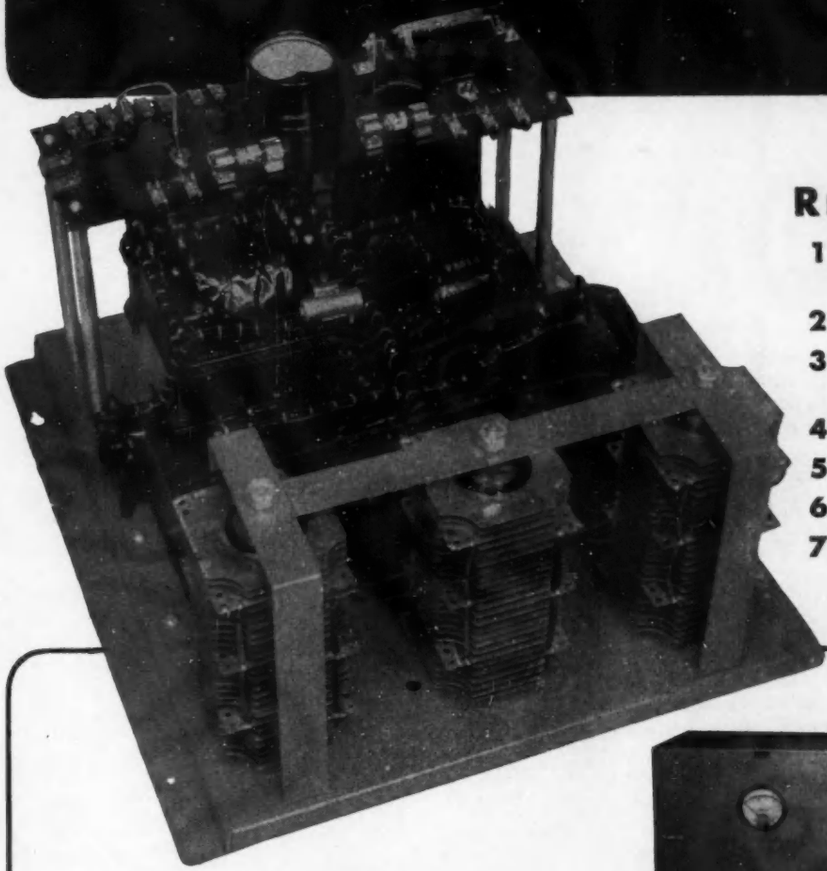
RAYTHEON RECTICHARGERS



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6. Increase lamp life.
7. Increase battery life by as much as 40%.

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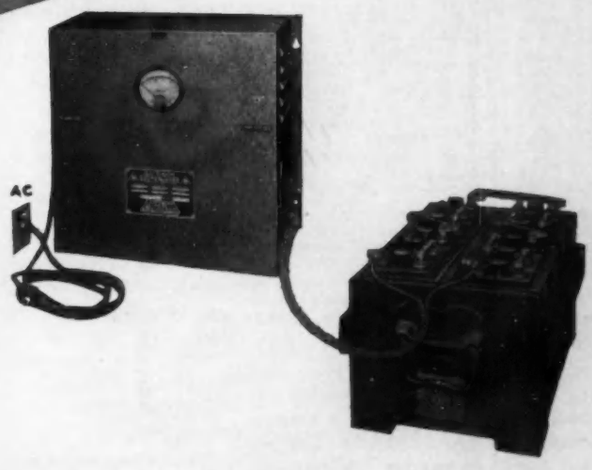

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Line AND Desk

Q. We are having difficulty in getting good toll transmission on one of our magneto lines due to subscribers eavesdropping on this line. A condenser in the receiver circuit of the telephones does not seem to help. What should we do?

A. One method which has been found practical is to connect a 3000 ohm resistance in series with the receiver and arrange an extra pair of contacts on the hook switch to cut this resistance out when the receiver hook is in the up position. A battery-saver latch on the hook prevents the hook switch from cutting out the resistance until the subscriber presses the latch to talk. The series resistance serves to greatly reduce the amount of voice current shunted through the eavesdropping telephones and yet allow the subscriber to hear satisfactorily. The circuit in Figure 1 shows the use of the series resistance and the extra contacts on the hook switch.

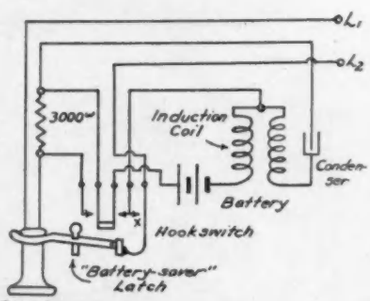

Fig. 1—Special subset circuit designed to minimize transmission losses due to eavesdropping subscribers.

Q. We need special crossarms for use on joint poles and have a surplus of standard 10-pin crossarms. Can we use the surplus arms for this purpose, and how should the pins be re-spaced?

A. The standard 10-pin crossarm may be converted for joint-pole use by drilling new pin holes at the points indicated in Figure 2. The type B crossarm, as the joint-pole arm is called, is designed to enable a power

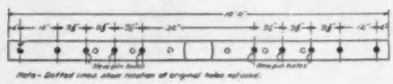

Fig. 2—Standard type A 10-pin crossarm converted to type B crossarm.

lineman to safely climb through and above the telephone lines with his equipment. The spacing between the pole pair pins, ordinarily 16 inches on the standard arm, is altered to provide a minimum of 32 inches clearance (joint poles carrying power wires with a maximum of 7500 volts). By making the spacing between the other pins approximately 9 3/8 inches, except that between the two outside pins at each end of the arm, only six new holes need be bored for the pins, the remaining outside pins being left in their original positions. The strength of the crossarms is not greatly affected by the extra holes; provided the arms are sound and free from excessive checks and splits. The holes should be left open to provide drainage for moisture absorbed by the crossarm.

Q. What method should be followed in cleaning relay contacts?

A. For cleaning contacts on a number of relays, carbon tetrachloride, flat toothpicks, and a contact burnisher was utilized. The procedure is as follows: Holding the relay contacts open, apply a drop of the tetrachloride to the contacts by means of a toothpick. Soak the flat end of the toothpick in the tetrachloride and insert it between the contacts. Then, while applying light pressure on the contacts, saw the toothpick back and forth between the contacts. This will loosen any particles of dirt remaining on the contacts which can then be flushed away by applying a fresh drop of carbon tetrachloride to the contacts with the other end of the toothpick. (Note: Use a new toothpick for each pair of contacts cleaned, and be very careful not to get the liquid on the contact insulators. Also do not inhale the fumes of the carbon tetrachloride for any length of time, especially when working in a confined space). Burnish the contacts by inserting the blade of the burnishing tool between the contacts held together with light pressure and pulling it back and forth several times. The space between the relay springs should be cleaned by means of linen tape.

Q. With the present shortage of telephone equipment, we are wondering if it would be possible to use subsets of different ringer resistances on the same rural line.

A. In the past, it has been the consensus of telephone men that the ringers of subsets bridged across the same line should all be of the same resistance, and that the use of ringers of different resistance values would result in one ringer receiving more current than another having a higher resistance with a consequent reduction in the ringing quality of the latter. Experience has indicated that this is not always the case. If the exchange ringing machine has sufficient ringing output, and the line is not too heavily loaded, satisfactory ringing quality can be obtained in spite of the difference in ringer resistance. Also, in straight bridging systems, the hand generator in the subscriber's sets should be sufficiently strong to ring all stations on a single line. It is better to group 1000 ohm ringer sets with 1600 ohm sets, or 1600 ohm with 2500 ohm ringer sets on a single line rather than allow a very wide variation in the resistance of the ringers. It is good practice to limit the number of sets to eight or ten on a single farm line, since ringing and transmission difficulties increase with the increase in the number of sets on a line. Trees must be kept trimmed away from open wire lines to prevent excessive loss of ringing power due to leakage of ringing current through the tree foliage.

Questions Answered FREE

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Western Electric

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Electrical Fundamentals For the Telephone Man

(Continued from page 29)

at the extremities of the solenoid for a given current flowing in the coil.

When solenoids contain iron cores which are a part of the solenoid itself, they are no longer referred to as solenoids but as **electromagnets.** Electromagnets play a prominent part in practically all types of electrical equipment. Familiar examples of electromagnets are the small coils with an iron core used on ordinary door bells, the coils used on telegraph sounders, etc. (See Fig. 31.)

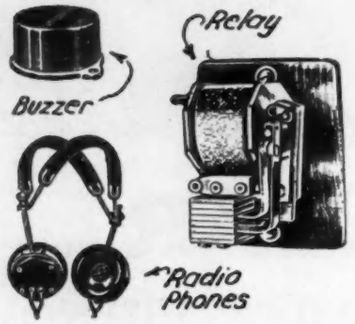

Fig. 31—Typical uses of electro-magnets

Magnetic Flux Factors

IN working with electromagnetic circuits it is often necessary to compute the total number of lines of force or flux in a coil or core. It is more difficult to compute precisely the conditions in an electromagnetic circuit than it is to compute the conditions in an electrical circuit.

If a given **magnetizing force** is applied in an electromagnetic circuit, the **magnetic flux** which will be produced will depend entirely on the character of the magnetic circuit. If the circuit consists only of an air core solenoid, the number of lines of force will be a minimum. If the coil has an iron core, a greater number of lines of flux will be produced by a given magnetic force. If an iron core of better quality is substituted, a still greater number of lines will be produced. Likewise, if the magnetic circuit is complete, that is, if the coil is completely encased in an iron circuit, the flux will be at maximum.

Magnetic Circuit Terminology

ONE term used in connection with magnetic circuit computations is the **Maxwell**, which is the unit of magnetic force and which is defined as **the amount of magnetism passing through every square centimeter of a field of unit density.**

The **Gauss** is the unit of field strength and is equal to "one line of force per centimeter." Magnetic **reluctance** is a term used to refer to "the resistance offered to magnetic flux by the circuit being magnetized." Reluctance is comparable to resistance in an electrical circuit.

The term **permeability** refers to the ease with which any substance can be magnetized. It is defined specifically as "the ratio between the number of lines of force per unit area in a magnetizable substance and the magnetizing force which produces these lines." In other words, it is the ratio of flux density to magnetizing force. The permeability of air is 1.0. The permeability of iron varies from several hundred to several thousand, depending upon the magnetic quality of the iron. For example a piece of iron whose permeability was 1000, would if inserted in a solenoid produce 1000 times as much flux as an air core of equal size. The several terms are illustrated in Fig. 33.

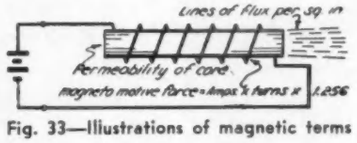

Fig. 33—Illustrations of magnetic terms

Magnetic Saturation

IN dealing with magnetic circuits, we find that as we increase our magnetizing force, the flux in the substance we are trying to magnetize increases. However, we eventually reach a point where a further increase in magnetizing force does not produce a proportional increase in magnetic flux. The point where a large increase in magnetizing force fails to produce an appreciable increase in magnetization is referred to as the **saturation point.** Most electrical apparatus such as transformers, etc., should be operated well below the saturation point.

Magnetic Circuit Computations

IN designing electromagnetic equipment, certain empirical formulas are used. These formulas generally involve the **ampere turn.** The term **ampere turn** refers to the number of turns and the current through these turns in a given magnetic circuit.

For example, if we have a coil which has 10 turns with 1 ampere flowing in it, we would say that the coil contains "10 ampere turns," or if the coil carries 5 amperes, we would say the coil contains "50 ampere turns." It has been experimentally determined that each ampere turn produces 1.256 **units of magnetic pressure.** Hence, formulas have been established which enable the experimenter to readily compute the number of lines of flux obtainable with a given ampere turn combination.

Practical Ampere Turn Problem

AS an example of the use of the ampere turn formula, let us compute the number of ampere turns required to produce

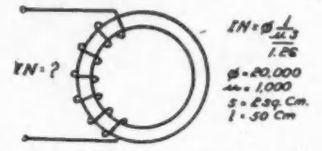

Fig. 34—Practical ampere turn problem

20,000 lines of force in an iron ring 50 centimeters in circumference, and having a cross section of 2 square centimeters. Assume that the permeability of the iron core is 1,000. (See Fig. 34.)

The number of ampere turns required to produce 20,000 lines in the circular core given is computed by the following equation:

$$IN = \frac{\Phi \frac{l}{\mu s}}{1.26}$$

Where:

IN=ampere turns
Φ= flux total
μ=permeability
s=cross section in sq. cm.
l=length in cm.

$$IN = 20{,}000 \times \frac{50}{1000 \times 2} = \frac{396}{1.26} \text{ ampere turns}$$

The coil, to produce this number of ampere turns, should therefore consist of 100 turns and 3.96 amperes, or any similar combination to give the desired number of ampere turns.

Magnetic Hysteresis

IN working with magnetic circuits, it has been found that magnetic effects often **lag** behind the magnetic forces causing them. The term **hysteresis** which means to "lag behind" has been applied to this condition. The practical effect of hysteresis is to result in energy loss in a circuit and to heat up the substance being magnetized. **Hysteresis does not occur in an air core coil** only in coils containing iron or steel. It is thought to be due to

the **friction** between the molecules of iron or steel when they are called on to reverse their position. Hysteresis naturally occurs only in magnetic circuits which carry alternating or pulsating direct current, as it is due to the movement of the molecules as they change their position from north to south.

Some magnetic materials have much greater hysteresis losses than others. Materials such as **perminvar** and **permalloy** which were developed by the Bell Telephone Laboratories have very low hysteresis losses. The hysteresis loss is minimum in soft annealed iron and maximum in hard steel wire.

Facts to Remember

SOME of the facts with which the experimental student should be familiar in connection with electromagnets are as follows:

1. The number of lines of magnetic force coming out of the poles of an electromagnet are proportional to the current flowing in the magnet coil, and to the number of turns of wire wound on the core.
2. The intensity of magnetic force in any electromagnet is proportional to the quality of the magnetic material used in the core.

   For example, some iron may have very good magnetic properties while other iron may be very poor. One of the best magnetic materials thus far developed is permalloy which was invented by the Bell Telephone Co.
3. When alternating current is passed through a magnet, the tiny molecules of iron must reverse their position 60 times a second inasmuch as the direction of currents flowing through coil reverses many times per second (assuming an ordinary house lighting circuit of 60 cycles).

   As a result of this rapid reversal there is thought to be a certain amount of friction between the molecules of iron as they turn rapidly first in one direction and then in the other, and this results in a heating of the core (known as Hysteresis effect).
4. Electromagnets used on alternating current generally have a core that consists of a number of pieces of thin iron or in some cases small iron wires. This is necessary to prevent heating due to **eddy currents**. For this reason you will note that direct current electromagnets generally have solid iron cores while electromagnets used on alternating currents have laminated cores. (Laminated means finely divided.)

Eddy Currents

EDDY currents result from the fact that the variation in the magnetic field around the core induces a voltage in the core, and this voltage sets up a circulating current in the relatively low resistance path which the mass of the core provides. In order to reduce the magnitude of these eddy currents the core is made of a number of thin sheets of steel which increases the resistance of the path through which the eddy currents would tend to flow thus limiting their magnitude.

(TO BE CONTINUED)

EXAMINATION NO. 2
ON PAGE 40.

AN ANSWER! See page 26

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New Guinea	542,600	"	"
Borneo	...385,200	"	"
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THE PIONEER'S CORNER

In no industry that I know of are there so many men and women with long years of service as in the telephone industry. This is due largely to the interesting work and the close association between the people employed in the telephone industry, who are trained to be and are spoken of as "one big happy family." It is due also in a large measure to the pride of many of the men and women with at least ten years and many with fifteen years or more service who belong to the Independent Pioeer Telephone Association. Not only do they enjoy the fellowship of the many members, but in the Pioneer badges and pins and certificates of membership they have tangible evidence of the recognition of their faithful service in this ever-growing industry.

Membership in the Independent Pioneer Telephone Association brings so vividly to our minds, as we reflect upon our career in the telephone industry, the common joys and heartaches experienced in sharing and solving the many complex problems brought on in an ever busy and changing world. Now that our nation is engaged in a mighty struggle for preservation of its ideals and way of life, our membership in the Independent Telephone Association is of immeasurable value in helping us realize that, in times of war or peace, we in the telephone industry are a vital part of a vast army striving to meet every demand and every emergency that is placed on us, not only by the war effort but also by the Unforeseen of life itself.

To know that we belong to that group who by common energy and effort have contributed so much to help build for our industry the enviable reputation it enjoys is a joy supreme, and to know that once again all in our membership are bending every effort in the successful prosecution of the war brings to our hearts that unending pride that goes in upholding the ideals and traditions of our industry in the service of our nation and our democracy. These truly are the benefits experienced from an affiliation with the Pioneer group.

Very truly yours,
Ralph F. Mateer

EXAMINATION NO. 2

Magnetism and Electromagnetism

1—State a law regarding the repulsion and attraction of magnets.

2—What is the theory propounded by scientists in explaining the phenomena of magnetism?

3—If a permanent magnet is approached near a soft iron bar, is the magnetism which is induced in the soft iron bar permanent; that is, will it remain after the permanent magnet is removed from the proximity of the soft iron bar?

4—What is the assumption with reference to the direction of movement of magnetic lines from one pole to another?

5—What magnetic effect does current produce in flowing through wire?

6—State the right-hand rule for determining the polarity of coils.

7—Why does a coil exhibit much stronger magnetic properties when iron is inserted in it?

8—Define each of the following terms: permeability, ampere turns, hysteresis, and reluctance.

9—How many ampere turns would be required to induce 10,000 lines of flux in a circular core consisting of iron wire having a permeability of 500 and a cross section of 3 square centimeters, and a length of 10 centimeters?

10—State the right-hand rule with reference to the direction of the circular magnetic lines around any current carrying conductor.

(Courtesy of Long Lines)

Booklet Issued on Savings Examples By the A. T. & T. Company

A 24-page booklet was issued May 10 by the American Telephone & Telegraph Company entitled "Selected Examples of Savings of Strategic War Materials by the Bell System."

The booklet is of much value to the industry as many examples are given and many new ideas germinated in its covers. Increasing the use of existing facilities is a must during wartime and many Independent telephone companies would do well to obtain a copy of the booklet for study. It is true that many of the smaller companies have not the personnel to study a subject this broad. The booklet will give you the advantage of the combined study of the Bell System.

Magazine Comments on Operators' Phrases

For a humorous sidelight on the effect of the war on the conversational habits of the telephone operators at the New York Telephone Company, see the New Yorker Magazine, issue of Feb. 27. Instead of the same old chestnuts, "Your call, ple-ease," "Tha-ank you" and "We are not allowed to give out that information," the New Yorker reports that Manhattan operators are now often speaking extemporaneously, on occasion coming through with such sparkling gems as "Certainly" and "Of course" and from time to time comforting customers with a sympathetic chuckling. The Company, instead of setting up fixed phrases as had been the policy up to the past year or two, now has decided "to give the girls their head" and encourages them to work out their own phrases.

California Company Offers Awards For Essays

The Associated Telephone Co., Ltd. and the San Joaquin (Calif.) Telephone Company are sponsoring an essay contest among all employees compensated under a daily wage schedule for a series of three Grand Prizes and four district prizes. The San Joaquin Company will offer three other prizes all in War Bonds or Stamps. Winners of Grand Prizes open to all will not participate in district prizes. First Grand Prize is a $100 War Bond, second is a $50 bond and third for $25.

All contestants shall prepare an essay, the rules state, from 300 to 500 words on the subject "Why I Like My Telephone Job as a Wartime Occupation." The contest and awards will stir up much interest among those associated with the two companies.

North Carolina Commission Okays Sale of Stock

The North Carolina Utilities Commission on May 29 authorized the Central Electric & Telephone Company to issue 100,000 shares of its common stock of the par value of $1.00 per share.

The order stated the issue could be disposed of at no less than par value and that the proposed increase in capital stock is to be used in the acquisition of property as opportunities for such acquisitions may be presented.

Big Noise Popular

The Bell Victory Siren, noise machine which the Bell Telephone Laboratories developed for the Office of Civilian Defense, has been adopted by several cities for air raid warnings. The siren's sound will carry throughout an area of nine square miles under unfavorable conditions and has covered 130 square miles under good conditions. Among cities using the siren are New York with 10 sirens, Chicago and Detroit with 20 each, and San Francisco with five.

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ADVANTAGES OF SPUN CABLE

A "perfect bond" between cable and supporting strand
NO FRICTION . . . NO WEAR

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NEALE SPINNER
(mfg'd. by THE CABLE SPINNING EQUIPMENT COMPANY)

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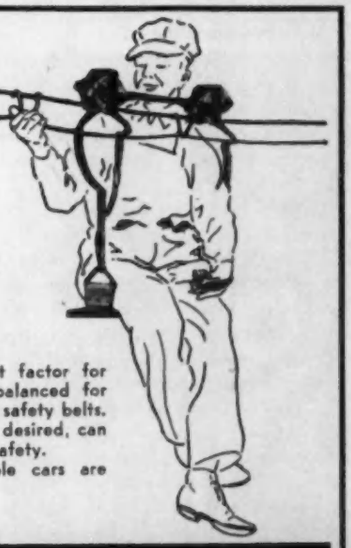
SERVICE . . .
SAFETY . . .
CONVENIENCE . . .
CHANCE
(A. B. CHANCE CO.)
SAFETY CABLE CARS



Chance Cable Cars embody every important factor for safety, service and convenience. Correctly balanced for comfort, and provided with holes for attaching safety belts. Each car is equipped with hand brakes and, if desired, can be furnished with wheel guards for added safety.
Two types: Rigid and Flexible. All flexible cars are adjustable.

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Communications and Electronic Developments

Rochester Timer Tone Proves Boon to Industry

The three-minute tone reminder engineered and now in use of the Rochester (N. Y.) Telephone Corporation described in this publication a few months ago has now been in use several months. A complete story and description was recently carried in "The Rochester Engineer" the publication of the Rochester Engineering Society. It was presented by Walter Criley, engineer of the company.

In a letter dated May 10 president John P. Boylan of the Rochester Company reported the experience of a two months' experience of the idea inaugurated by his company to reduce the length of telephone conversations. The letter was addressed to the Communications Division of the WPB in Washington and since has been mentioned by members of that group in addresses to the telephone industry.

Mr. Boylan reported:

"Average holding time of all conversations prior to introduction of tone—194 seconds.

Average holding time of all concersations after introduction of tone—167 seconds.

"This is a reduction of 27 seconds, or 14%.

"Prior to the introduction of the tone there was scarcely an Exchange in the city where, during the busy hours of the day, several positions were not tied up for cord equipment as a result of long conversations. Since the introduction of the tone the situation has not recurred.

"The introduction of the tone also seems to have reduced the number of conversations. Normally we would be running twenty thousand to twenty-five thousand calls more per day at this time of the year than we experienced last year. Since the introduction of the tone we have been running from ten thousand to twenty thousand calls per day under a year ago.

"An analysis of our service observations of April a year ago and April of this year indicates that the residence subscribers, who are the chief offenders in long conversations, have reduced conversations over three minutes this year over last year by 24.7%.

"I am confident that the money spent in this effort, in both cost of the tone equipment and the newspaper and radio advertising programs, was well worth while, not alone from the additional capacity made possible in our existing equipment, but in the savings in the operating force, resulting from the reduced number of calls and the shorter holding time."

RADAR Explained

RADAR, until now more zealously cloaked in secrecy than the Norden bomb sight, has been officially revealed to be one of the foremost scientific developments of the war.

Not even a rumor of its existance had been allowed to reach the public, until the War Department announced the astounding ability of RADAR to discover targets invisible because of darkness, smoke or clouds, and then to provide data for guns to direct an exact fire pattern on such targets at the maximum reach of the largest known gun.

A military miracle maker, RADAR is the code name for "radio detecting and ranging." It is an electronic instrument which projects a beam of radio impulses through space at the rate of 186,000 miles a second and, in much the same manner as the beam of a powerful searchlight discloses the location of a signboard at night, these impulses reveal the presence of distant objects such as airplanes, submarines, and battleships by rebounding to the observer. Here a cathode tube acts as an interpreter and makes these electronic signals visible to the human eye.

When trained on enemy planes, still so distant as to be beyond reach of anti-aircraft, RADAR reports the three elements of their position necessary for exact plotting (1) distance, (2) angle of elevation, (3) angle of azimuth. When the planes are within firing range, these data are then used to predict the precise point where shells should burst. Timing is of the greatest importance in these operations.

Unaffected by darkness, clouds or fog, RADAR is an infallible sentinel, a deadly gunner, and is now placed on U. S. Naval ships and other craft, as well as on fighting fronts, to warn of approaching enemy aerial or seaborne units. Credited by Lord Beaverbrook with winning the Battle of Britain for the English, RADAR, in the South Pacific has been responsible for enemy losses of millions of dollar's worth of ships, planes and submarines.

RADAR was developed on the basis of years of research and experiment in electronics, independently in the United States and Great Britain. Credit for the development must be shared by many of the foremost scientists of the two nations, both civil and military. In the United States the research institutions of both the Navy and the Army were vigorously pursuing investigations leading to the perfection of RADAR as a military instrument. Leaders in these investigations were Dr. A. H. Taylor for the Navy and Major General Roger B. Colton for the Army. More than two years before Pearl Harbor the Army and the Navy enlisted the services of Bell Telephone Laboratories which had already embarked independently on researches in radio location, and the Laboratories' fundamental work in radio transmission over a period of many years has contributed substantially to the Company's leadership in this field.

The fact that radio waves can be reflected just as light waves and sound waves had long been known and the phenomenon had been used, for example, to measure the electrical reflecting surface in the upper atmospheric layers

known as the ionosphere, just as mariners sometimes use an echo of the ship's whistle to establish their distance from the face of a cliff. Only with the advent of the ultra-short radio waves in the early 1930's did it become possible to observe reflections from objects as small as an airplane. This was done by Bell Laboratories' engineers in 1932 when they observed that an airplane flying about 1,500 feet overhead produced a very noticeable "flutter" of about four cycles per second.

In 1938 Western Electric introduced the absolute altimeter commercially for use in aircraft. This instrument, based on development work by Lloyd Espenschied and R. C. Newhouse which began several years before, employed the principle of shooting radio waves against the ground and timing their return to give the exact height of a aircraft above the terrain. In the same year, D. K. Martin, also of the Laboratories, using a modification of the absolute altimeter enclosed in a barnlike directional antenna system of galvanized sheet iron, made a series of experiments at 15th Street in Brooklyn overlooking the Narrows leading into Manhattan's upper bay. He observed that radio waves directed against ships passing through the Narrows were thrown back into the receivers. This might be called a form of RADAR.

With the formation of the National Defense Research Committee, RADAR became one of the most active lines of investigation by a large group of scientists. A mission of British scientists to this country made a complete disclosure of the status of their art, with reciprocal disclosures by the N.D.R.C. group. One episode in the development was the sending to England in 1941 of Ralph Bown, one of Bell Laboratories' department heads to study performance under actual war conditions.

Still in limited use in the U.S. Armed Forces when America entered the war, RADAR is now standard equipment for both Army and Navy. An official statement says of it, "RADAR is used by static ground defenses to provide data for anti-aircraft guns for use in smashing Axis planes through cloud cover, and by airplanes and warships."

RADAR operators in the Armed Forces are trained technicians, able to install and maintain, as well as operate the apparatus. To assist in the training of a sufficient number of these technicians to man the equipments coming off assembly lines, Bell Telephone Laboratories has set up a school for war training, staffed by its engineers and using instructional material which they have prepared.

Credit For Radar Claimed

Credit for being the first to bring radar or radiolocation from the laboratory stage to **the level of a practical operational science** goes to Britain's Sir Robert A. Watson Watt, the Air Ministry's scientific advisor on Telecommunications, it is asserted in the May issue of "In Perspective," a publication edited for the British Information Services by the Joint Liaison Committee in Washington. This added another chapter in the current published statements on the development of radar—up to recently a term restricted by the Army and Navy from publication.

The publication, which points out that "radiolocation" and "radar" mean exactly the same thing, stated that radiolocation has sometimes been confused with early experiments in which it was found that a moving body, such as a ship, obstructed the path of radio waves when it crossed them, and added that in such cases the distant object was merely acting as a screen between a radio-transmitting and radio-receiving station, a quite different phenome-

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non from the ship acting as a reflector of radio waves and sending them back to their source. Commenting on the fact that the principle of radar or radiolocation was known long before its successful application, the publication claimed that the British scientist, a pioneer in fundamental radar research, was commissioned by the British Government when war seemed inevitable to work out detectors using reflected radio waves, and **by September, 1939, both radiolocators and the necessary operating personnel were in action.**

Continuing its account, the publication cited that during the Battle of Britain, when the RAF and radar combined to defeat the Luftwaffe, "Britain gave the United States the benefit of her latest radiolocation developments," and invited American scientists to collaborate on these new projects and bring them to the production stage. "This they did with such success," the publication reported, "that if the story can ever be told, it will constitute one of the most brilliant and important examples of Anglo-American cooperation."

The publication, conceding that during war time no one country could simultaneously exploit all its potential developments to the fullest degree, declared that "it is probably true to say that at any given moment, each country is temporarily ahead of another in those types or techniques on which it happens to have concentrated."

But on the vital question as to who invented radiolocation or radar, the publication states only that the answer must always be largely academic as so much depends on the interpretation of "invention."

Compares Military Repeaters

In less than half a working day more military telephone repeaters are being made now than the total used in France during World War 1, according to R. E. Smith, head of the Wire Transmission of Federal Telephone and Radio Corporation, Newark, manufacturing affiliate of International Telephone and Telegraph Corporation, which manufactures these compact repeaters.

Repeater used in World War I.

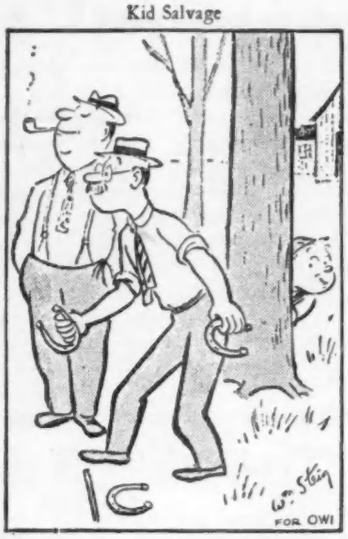
The use of repeaters in stepping up transmitted telephone messages was just beginning when World War 1 started, therefore, not many were available for military use. A few of them —large and unwieldy—were used by the American Army, but today's military repeater is so different, so small and compact as compared with its "granddaddy", that there can be little doubt that miraculous advances have been made in this type of equipment since they first came into use.

Repeaters like the one in the accompanying photograph were used during the First World War in long-distance telephone circuits such as those established between Atlantic Coast ports of France and General Pershing's headquarters at Chaumont. As comparatively inefficient as they were, if they had not been in use, much larger wires would have been necessary for these and similar circuits; the saving in precious copper was considerable.

Repeaters used in the current conflict are approximately one tenth the size of the early ones, and, of course, are easily portable. The cabinet of first repeaters did not contain the current supply source; a whole barrel of dry cell batteries was supplied for use with each of them. Today's military repeaters—even the smallest—have self-contained current supplies.

Repeater manufactured today.

Kid Salvage



Acoustic Stethoscope

RCA Laboratories have developed a new acoustic stethoscope which is so sensitive in its range of hearing that it introduces many sounds that have never been heard before by doctors. The instrument, developed by Dr. Harry F. Olson, promises to amplify the study of sound within the human body to facilitate medical diagnosis based upon the structure of sound.

Time Delay Relays

The new type TDC synchronous motor driven time delay relays have been announced by the R. W. Cramer Company, Inc., Centerbrook, Conn. A bulletin describing these new types is now ready for distribution by that company.

The Cramer company is well known in the telephone field and their relays are known for their compactness and reliability. The new type provides an adjustable or fixed time delay between the closing of a control circuit and subsequent closing or opening of a load circuit.

Commissioner Beamish Retires

Commissioner Richard J. Beamish, for years the stormy petrel and major objector of the Pennsylvania Public Utilities Commission, has at last accepted the inevitable and decided not to engage in a court fight against the Pennsylvania statute which bars him from serving on that state commission until his successor is confirmed. He also has resigned from membership on the Committee of Five state commissioners, named by the NARUC, to cooperate with the FCC on telephone regulatory problems and from the chairmanship of the NARUC Committee on Public Utilities ties Rates.

Commissioner Beamish accused the utility interests of sponsoring the act which led to his dismissal. He indicated that he had offers which had to do with utility matters and that the efforts of the utilities to oust him "may prove to be the apple which has turned to ashes on their lips." However, it was not revealed whether the new post would be in the Federal Government.

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WITH Amertel

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The extra strength of these wires saves on maintenance. They withstand the strain of wind and ice loads. With continuity of service so vital to the war effort—and with maintenance crews cut to the minimum—this extra protection against failures is highly important.

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These tags are placed for your protection on every coil of AMERTEL Telephone and Telegraph Wire and AMERSTRAND Steel Strand. They are your assurance of highest quality.

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No figuring for busy operators. No chance for errors.

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is low in cost and pays for itself in a short time by the time it saves operators and by the elimination of errors and disputes.

Made in two electrically operated models and one spring-driven model.

Write for particulars.

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308 Sussex St.
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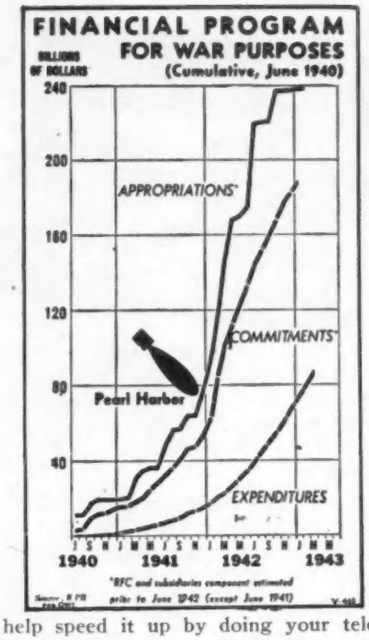
The Proper Time For the Proper Effort

WHILE reading the "Kentucky Circuit Rider," the weekly letter to supervisory persons of the Ashland (Ky.) Home Telephone Company, we were impressed by the article in their issue No. 27 on the important role all telephone folk are now playing in helping to win the war. In fact, it was so good we are taking the liberty of reproducing the entire article herewith.

"From time to time we have discussed here the essential nature of the communications business as well as pointed out the important roles all telephone folk are now playing in helping Win the War. It seems in some sections that there is remaining among some of our people a degree of speculation as to the importance of telephone work. The past 18 months experience on your telephone job has doubtless proven that you are accomplishing near the impossible in increased traffic loads and in maintaining large plant distributions with a minimum of manpower. Yet, this isn't enough because mainly you and your fellow workers are the only persons to realize the proportions of the job you and communications are playing. Others, however, do recognize your efforts just the same, and they, also, are conscious of the time. Perhaps if the newspapers and magazines played up your work as they do ship-building, airplane production, transportation, and other industry feats you would be more aware of your extremely vital telephone job and the World-Wide Network you help keep intact.

"The Telephone Industry will likely never be glorified in Peace nor War Times because telephone service is more or less taken for granted. The public has too long been accustomed to dependence in you and they have been, time and time again, shown that you 'get the message through.' Obstacles mean little to your industry; at least, no one ever hears much about them. Yet, you have, and overcome plenty of difficulties. At present you are helping to operate a war business with a minimum of trained personnel. Each qualified man or woman on the telephone job today is more valuable in his present capacity than he would be in doing any other type work. The surplus personnel was reduced months ago. There remains little resources of new people from which to draw for training. As a result, you display the proper spirit of Wanting to Win the War Quicker by staying on your telephone job—putting forth every properly placed effort now which is the proper time to 'Keep 'Em Talking.' IF you don't work because of personal necessity, do so now because of national necessity. IF you like telephone work for its fascination, forget it for the Duration and dig in as our boys are doing in North Africa. —IF you must look for greener pastures, wait until Victory comes and help speed it up by doing your telephone job that you are already equipped to do.—IF you are having a difficult time making ends meet, remember there are millions in the same boat—the only ends meeting now are the Allied Forces.—IF you believe your telephone work requires little skill ask an employee in another business what he knows about communications. It is likely he knows less about your business than you know about his.



"So, the Proper Time is NOW and until VICTORY. The Proper Effort is the BEST you've got each hour of each day on the job, promptness, no unreasonable requests for excused absence, self application to duty, fellow worker cooperation; and, all this will bring adequate, though heavily burdened, War Time Telephone Service of which you, a Home Front Soldier, played a terrific part towards Victory. Remember that speedy dependable telephone service rendered by the Signal Corps on the Battlefronts would be of little significance if first the same type service were not rendered on the Home Front from which all guns, ammunition, planes, tanks and war supplies must originate."

Holding the Army-Navy "E" flag with a white star, which was presented to the Storage Battery Division of Philco Corporation for continued excellence of production are, left to right, Mr. M. W. Heinritz, vice president in charge of the Philco Storage Battery Division, Colonel C. F. Stanton, Commanding Officer, District No. 5, 2nd Service Command, Army Supply Force, Cornelius F. Bradley, president of local No. 108, U.E.R.M.W.A. and Commander D. L. Trautman USN (Ret) Office of Inspector of Naval Material, Philadelphia, who made the presentation.

Operator Buys Exchange

Ida Lockhart, telephone operator at Foresthill, Calif., is going into the telephone business for herself. Last month the California Commission authorized the owner of the exchange, Matthew B. Langstaff, to sell to Miss Lockhart all the 11 stations, 32 telephone poles, switchboard for 20 lines and all of the telephone instruments, all for $350. The operating revenue for last year was given as $838.

"Please Limit Your Call To Five Minutes"

Because of crowded conditions of toll circuits in many localities toll operators are being instructed to ask long distance customers to limit their conversations to five minutes.

This practice will be followed when connections are established on calls which have been delayed because of a report of a posted delay or where a posted delay is in effect in the direction of the called place. The practice will not apply to priority or emergency calls. The phrase to be used by the operator, at the time conversation is about to start and within the hearing of both calling and called parties, is "Please limit your call to five minutes —others are waiting."

It is not intended for this new practice to be rule which is drastically enforced. It is merely a request for one customer to limit his conversation so that facilities may be shared with others. Should the customer object to the limitation the operator will make no effort to carry out the practice by calling time, unless so requested by the customer, or by other means of terminating the conversation.

Signal Corps to Enlist 2,000 WAACS

The War Department announced May 11 that plans have been completed for the enlistment of 2,000 WAACs to be trained for service in Signal Corps military communications work, and that enlistments are now being accepted at Service Command WAAC recruiting offices for the new training program.

Many of the WAAC recruits will receive training in radio code operation, and others will be schooled in radio repair, teletypewriter operation, switchboard installation, and other Signal Corps duties. The War Department reported that requests are pouring in from all Service Commands for the new "Signal Corps trained" WAAC personnel. The plan is expected to be an important step forward in the program of using the feminine "soldiers" to replace Army personnel needed for combat duty.

Impromptu Firemen

When fire broke out in a barn near Albany, O., the town had no fire department to cope with it, but Mrs. Dolly Parker, Albany telephone operator, called 50 homes and men from miles around hurried to help. The barn was destroyed, but the livestock and farm machinery were saved.

Added Opportunity

FOR

SERVICE

WITH

Gray Paystations

Because of the unusual conditions affecting all of us there are tremendous demands on telephone companies in nearly every part of the country. Sudden shifts in population . . . factories springing up in formerly agricultural districts . . . whole new cities and towns mushrooming. All these things play their part.

Where demands for individual telephones cannot be met, paystations to serve groups may be the answer. And sudden, heavy increases in population — transient or permanent—mean new stores, new restaurants and other business places which call for paystations.

Here are the opportunities for you to serve many people—and at the same time serve the country — by establishing paystation telephone service for people who might otherwise be wholly or partly denied.

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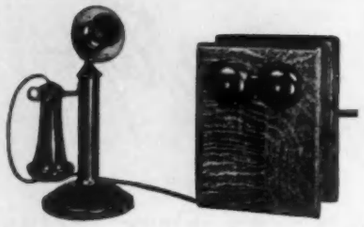

Now - -

Use Your Old Equipment

Dig out those old desk sets and signal set parts, and have them refinished and remanufactured into fine quality, clear talking sets.

Such telephones will serve you profitably during the emergency, and can build goodwill for many later years in rural locations.

See Your Suttle Salesman Catalog for greatest values in this type of service.

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For Quicker Longer Service

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FASTER—Light up in one-fifth second.

BRIGHTER—Maximum end-on candle power. Sharper daylight signals.

STRONGER—Average life 1,500 hours of high brilliancy. Strong breakage resistant filament. Tight, correctly formed bases.

Available in: CLEAR
NATURAL RUBY*
NATURAL GREEN*

**While present supply lasts*

SYLVANIA
ELECTRIC PRODUCTS INC.
SALEM, MASS.
Formerly Hygrade Sylvania Corporation

Commercial Surveys

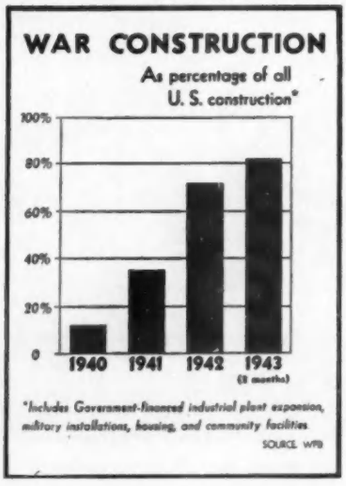
(Continued from page 30)

the area map into terms of telephone service requirements for such a future period as may have been selected as the one in which the proposed plant construction will be adequate. It is obvious that unexpected community developments, such as the establishment of a large industrial plant in the immediate neighborhood, are very likely to throw the most careful study of the probabilities as to service demands entirely out of line with actualities but the usual normal developments can usually be forecast with reasonable accuracy by one who is acquainted with the territory.

General Method

IN large telephone systems the making of a complete commercial survey is part of the periodic planning for plant extensions and involves many forms of data and many more or less complicated procedures. In the smaller telephone system it is a simple study to assist in the provision of reasonably adequate facilities at construction costs which are the most economically satisfactory all things considered.

A map of the community of sufficiently large scale to show the individual parcels of land such as building lots is needed. Such a map can be readily secured in most communities but it may happen that it is not readily available and that a map must be drawn. This is mentioned because it is highly desirable that when such a map is drawn that it be made of a large scale to the end that a permanent record may be maintained thereafter of the development of service demands. In other words it is an opportunity for the telephone company to draw a map on such a scale as will permit its use to record the **plant data that every telephone office should maintain.** With such a map the procedure is to endorse on **each parcel of land** the number of telephone stations that are likely to be required to supply services to future subscribers plus the number required to supply the service presently in existence.



The Author

Value of Commercial Surveys

WHEN the prospective and present service demands as represented by telephone stations have been entered on the map it is obvious that a basis is available for planning cable systems, locating cable terminals and for identifying the possible future subscribers that offer a possibility, under normal conditions but not in war time, of selling additional service.

The small space available on any map in each building lot makes imperative the use of an abbreviated code in recording the data obtained. For this purpose as well as for many other occasions involving the division of the service into classifications there is nothing better, in the author's opinion, than the simple code at top of page 51.

Extreme care supplemented by careful inquiry must be taken to list every likely future demand for service in each parcel of land. For illustration if inquiry discloses the likelihood of an apartment building being erected at a certain site then the number of

Code	Meaning
1 B	Individual Business
2 B	Two Party Business
4 B	Four Party Business
5 B	Five Party Business
1 R	Individual Residence
2 R	Two Party Residence
4 R	Four Party Residence
5 R	Five Party Residence
8 R	Eight Party Residence
10 R	Ten Party Residence
R B	Rural Multi-party Business
R R	Rural Multi-party Residence

domiciles in the proposed building must be ascertained and a corresponding number of residence and business telephone stations listed thereon to indicate the plant requirements, the cable pairs and the cable terminals that **must be reserved** for the future occupants. A map of a small imaginary community with the imaginary results of an imaginary commercial survey endorsed thereon is shown in Fig. 1. (*See page* 30).

Colonel W. F. Repp

Col. W. F. Repp Passes

Colonel William F. Repp, vice president and director of International Telephone and Telegraph Corporation, died on May 25 at St. Luke's Hospital, New York City, after a brief illness. He was 66 years old. He resided at the Hotel Vanderbilt, New York, N. Y.

Colonel Repp's background of experience in the communication services of this country and those of South America, and in the Signal Corps of the U. S. Army during the First World War was outstanding. As head of I. T. & T.'s South American interests, he was a key factor in the development and growth of telephone communications in South America. He was active in the building of a transcontinental telephone line which interconnected the telephone systems of Argentina, Uruguay and Chile. He was a leading figure in the construction of powerful radio-telephone stations at Buenos Aires, Argentina; Rio de Janeiro, Brazil; Santiago, Chile; Lima, Peru; Bogota, Columbia; La Paz, Bolivia; and San Juan, Puerto Rico, providing these countries for the first time with international telephone service.

He is survived by a son, Lieutenant William R. Repp, Jr., who is serving overseas with the U. S. Army Signal Corps; a brother, F. J. Repp, of Philadelphia, and a sister-in-law, Mrs. Glen D. Heald of East Orange, New Jersey.

"Gibson Girl" Has New Job

A new, hand-powered, emergency radio transmitter, responsible for the rescue of many fliers at sea, has been developed by Bendix Aviation through the collaboration of the Army Signal Corps, it was revealed by the War Department May 16.

The apparatus, because of its hourglass contour is known as the "Gibson Girl" and, since manufacture was instituted some time ago, thousands of sets are in use on aircraft for missions which take them over great stretches of water. Besides the transmitter, which is pretuned to the international marine distress frequency of 500 kilocycles, and is operated with the turn of a crank, equipment of the "Gibson Girl" also includes a collapsible box kite, two deflated balloons, two hyrogen generators, two spare rolls of aerial wire, a signal light, and the International Morse alphabet and printed instructions.

NOW—as never before—is the time to practice "preventive maintenance." Minor repairs and replacements today will save man-hours and material, prevent service interruptions, later.

● Where open wire circuits are involved—(1) Remove excess sag in the line wire; (2) Replace loose and missing ties; (3) Tighten or replace guys, where necessary.

● If needs demand, replace sections of line on present pole structures with *Crapo* HTL-85 Line Wire. This high-tensile line wire has 60% greater strength than standard BB; provides an increased factor of safety, minimizes maintenance.

● For essential new construction, use *Crapo* HTL-85 or *Crapo* HTL-135 Line Wire! *Crapo* HTL-85 permits spans to 225 feet in heavy loading districts. *Crapo* HTL-135, with two and one-half times the strength of BB wire, makes possible spans of 350 feet under heavy loading conditions. Both possess superior telephone transmission qualities.

Write for Bulletins 201 and 202!

Ask the distributor of *Crapo* Galvanized Products!

INDIANA STEEL & WIRE CO.
MUNCIE INDIANA

SUB-CYCLE Low Initial Cost
•
ECONOMICAL IN OPERATION

Sub-Cycle meeting every desirable requirement for the ideal ringing machine has proven high in efficiency. There are no moving parts—nothing to adjust. Does not interfere with radio reception—is economical and quiet in operation and produces a powerful ringing current. Once installed there's no routine maintenance. Built in 6 models for loads from Small PBX to Large Central Office.

•

ALSO PULSATORS

Sold by Leading Distributors

THE LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

Chance Expanding Anchors make pole lines stay put . . .

Chance Steel anchors are being depended upon to protect vital power and communication systems for the United Nations at war. Engineers who select them know that these anchors stay put—They expand to more than two and one-half times their size—They withstand severe punishment without breakage—The blades expand in opposite directions, equalizing strain—The nut retainer prevents riding up the rod and permits abandoning the anchor.

Chance Steel anchors are made in four way types and several sizes.

A·B·CHANCE CO. CENTRALIA MISSOURI

Personalities

Bruce H. McCurdy

Bruce H. McCurdy, chief engineer of the WPB Communications Division, resigned from that post May 22, on account of ill health. He plans to return to his home in Oakland, Maine, where he will resume the direction of the King Axe & Tool Co. of which he is president.

No successor has as yet been designated. Mr. McCurdy has been with the WPB Communications Division practically since it was organized during the latter part of 1941. Prior to that he had held an important engineering position with the FCC to which he had come after a number of years of service in executive operating posts with the foreign telephone companies of the International Telephone and Telegraph Corporation.

•

R. H. Colley, engineer of the Bell Telephone Laboratories, Inc., Murray Hill, N. J., was elected president of the American Wood Preservers Association at its recent annual meeting. **Walter P. Arnold,** Orville, O., technical director of the Wood Preserving Division, Koppers, Co., was elected first vice president.

•

Major L. Gray Beck, former assistant to the engineer of the West Coast Telephone Company, Everett, Wash., has been promoted from the rank of captain. He is now serving in North Africa. **Sgt. Lloyd Afdem** of the same company recently wrote the company that he had met **Major Beck** while he was in active service in Africa.

•

George H. Flagg, chief deputy secretary of state, has been appointed as Public Utilities Commissioner of the Public Utilities Commission of Oregon. He succeeds **Ormand E. Beam.**

•

C. L. Kirven, former Kentucky state manager of the Southern Bell at Louisville, has been promoted to the position of general commercial manager for the entire Southern Bell system with headquarters at Atlanta, Ga.

•

Ray Palmer, of Minnesota, who is now working for the Engineering Officer of the Alaskan Communication System at Anchorage, Alaska, recently wrote your editor a long letter on conditions in that area. We have written him for permission to reproduce his letter in an early issue.

•

A. Wardman, Whittier, Calif., president of the California Chapter of the Independent Pioneers has notified members that the California Independent Pioneers will hold a business meeting at the Miramar Hotel, Santa Monica, Calif. during the convention of the California Independent Telephone Association.

•

G. E. Baker, of Scappoose, Ore., has sold the Halsey Telephone system to **Mr. and Mrs. O. B. Porter** of Portland, Ore., who assumed charge last month. **Mr. Baker** had the system for one year.

•

Burton Lynch, a former cable splicer for the Indiana Bell Tel. Co. in Indianapolis, Ind., has been awarded the Silver Star for devotion to duty and gallantry during action in North Africa. **Mr. Lynch** is a private in the Signal Corps and on February 18 he destroyed communications apparatus and lines of the enemy in the face of artillery fire, tank and dive bomber attacks.

•

Mrs. Jennie Crouse of the Rossville (Ill.) Telephone Co. recently received

a special honor of a silver medal plus a cash award of $500. The award was provided by the Theodore N. Vail Memorial Fund, established by the former president of the American Tel. & Tel. Co.

●

O. A. Olson is the new manager of the Cashmire, Wash., exchange of the Inter-State Telephone Company. He succeeds **E. C. Jessup,** manager at Cashmire for the past 28 years, resigned.

●

Fred H. Alexander, founder in 1902 of the Platte Valley Telephone Company in Nebraska, died recently at Fort Meyers, Florida. He operated the company until 1919 when it was sold.

●

Earle France, Elma, Wash., has been appointed receiver of the Washington Telephone and Utilities Company which serves Elma and adjoining territory. The receivership was filed last month.

●

L. M. Baker, district manager of the Purcell, Okla., exchange of the Southwest Telephone Company, is convalescing from a very serious illness. He is now out of the hospital and recovering rapidly.

●

Jessie South has filed application with the Oklahoma Corporation Commission for discontinuance of the Pearson, Okla., telephone exchange and dismantling of the equipment. Hearing is set for June 11.

●

A. A. Jones, the new owner of the Branson (Mo.) Telephone Company, has announced many new improvements for the exchange which serves several Missouri towns. **Mr. Jones** is popularly known as "double A" while **Mrs. Jones** has been an operator at the local exchange for several years.

●

Corp. John Hyatt, former combination man at the Pekin, Ill., exchange of the Middlestates Telephone Company, has completed special training at Camp Crowder, Mo., and is one of a class of ten chosen for further training at the Bell Laboratories in New York.

●

Leland Wright, Alexandria, Minn., is doing well, according to a report from **J. C. Crowley, Jr.** during the Wisconsin convention last fortnight.

●

Fred Adkins, manager of the Osceola exchange of the Lincoln (Neb.) Tel. & Tel. Co., has been promoted to the post area manager at Sutton, Neb.

Walter S. Gifford, Harvard '05 president of the American Telephone and Telegraph Co., who has just completed the national chairmanship of the successful American Red Cross 1943 War Fund drive, was elected President of the Harvard Alumni Association at the annual meeting of the Association held at the Harvard Club of Boston.

●

Dr. Frank B. Jewett, leading scientific figure in the field of telephonic communications and a vice president of the A. T. & T., was given the signal honor by the National Academy of Sciences April 27 of being reelected its president for another four years which will end June 30, 1947. The reelection of the chief executives of the National Academy has been a rare ocurrence and Dr. Jewett's continuance in that office was unanimously urged by the Academy membership because of his war work.

●

While district supervisor **R. H. Harlow** of the Lancaster, Kentucky, exchange was busy protecting his company's property during a recent fire, his wife was cited as a heroine for sounding the alarm by hand operating when the electrically operated siren failed. Her quick, thoughtful action minimized fire damage.

●

A. V. Emerson, a Kansas communications pioneer, died recently at his home in Dodge City, Kan. **Mr. Emerson,** who was 73, retired nine years ago as district manager of the Southwestern Bell Telephone Co. after serving in that position since 1918.

●

Albert F. Hildreth, 71, organizer in 1902 and subsequent manager of the Hollis (N. H.) Telephone Co., died last month after a prolonged illness. Prominent in civic affairs, **Mr. Hildreth** had held various city offices and served as a representative in the state legislature in 1926-27.

You can rely on Pole line Hardware that bears the L-M trademark
LM
✓designed the way you want it
✓built to last
✓packed for convenience
✓RIGHT in ALL WAYS
LINE MATERIAL COMPANY
Represented By AMERICAN AUTOMATIC ELECTRIC SALES COMPANY

W. C. MEREDITH COMPANY
Inc.

WOOD PRESERVERS'

P. O. STATION "A"
ATLANTA, GEORGIA

•

Pressure Treatments with Creosote

—or—

Chromated Zinc Chloride

•

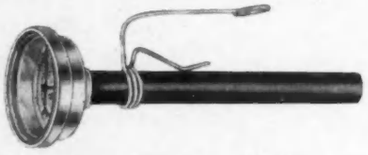
Stocks of Crossarms, 2" to 4½" Single and 2" to 4" Multiple duct Split Conduit, Cover Plank and Anchor Plank conforming to A. T. & T. Specifications carried at all times.

PROOF!

ACTUAL LABORATORY TESTS SHOW THAT THE "PAPER" METHOD OF OBTAINING METAL TEMPERATURE GIVES HIGHLY VARIABLE RESULTS

LAB-REPORT

"In the test, pieces of paper were inserted in molten solder. Simulating actual field conditions, the thickness and characteristics of the papers varied. Some were newspaper, still others light cardboard. These all turned brown at different temperatures. Error was further increased by unbiased observers who disagreed on exact shade of brown in test papers.



EXACT TEMPERATURE

Dillon Temperometer ***always*** reads the same. No chance for error. Instantaneous. Handy. Priced low to make the job right.

W.C.DILLON & CO.INC. 5410 W. HARRISON STREET CHICAGO, ILLINOIS

Telephone Engineer

HANDBOOK TABLES

Subject: Aerial and Underground Cable Splicing Unit Costs

Index—Cable Data
Date—June 15, 1943

General

The following table gives the time required to splice either underground or aerial cable for both random and tag splices and the unit cost.

Size of Cable	Splicer Hours		Unit Cost	
	Random	Tag	Random	Tag
15 pr.	3.	4.	$ 9.50	$ 12.50
25 "	3.5	4.5	11.00	14.00
50 "	4.	5.	12.50	15.50
100 "	4.5	5.5	14.00	17.00
150 "	5.	7.	15.50	21.50
200 "	6.	9.	18.50	27.50
300 "	8.	10.	25.00	31.00
400 "	9.	14.	28.00	43.00
600 "	12.	20.	37.00	61.00
900 "	16.	25.	49.00	76.00
1200 "	24.	40.	73.00	121.00

Charles A. Robinsen, vice president and general manager of the Chesapeake and Potomac Telephone Company, has been appointed chairman of a Postwar Planning Committee of the Washington Board of Trade. **Col. E. Goring Bliss,** assistant to the general manager of the C. & P., has been named to head the Military and Naval Affairs Committee, and **John A. Remon,** C. & P. vice president, is chairman of the River and Harbor Committee.

•

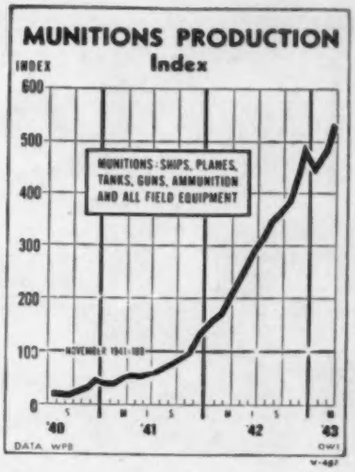
WPB Communications Division director **Leighton H. Peebles** and a group of telephone industry executives are scheduled to attend the Washington, Oregon, and California conventions this month. The group from the telephone industry is slated to include president **Harold V. Bozell** of the General Telephone Corp., president **R. A. Lumpkin** of the Illinois Consolidated Tel. Co., vice president **Lloyd Spencer** of the Stromberg-Carlson Company, **Clarence Jones,** Pennsylvania Telephone Corp., and **J. B. Rees,** A. T. & T. War Activities engineer. **Mr. Peebles** will make an inspection of the Pacific Coast telephone operation. Visitors leaving Chicago will include **Garland B. Foscue** and **C. S. Cadwell** of the Automatic Electric Company.

•

Frederick R. Lack, after having completed a most constructive and important assignment for the armed forces as Director of the Army-Navy Electronics Production Agency, has returned to the Western Electric Company and was elected vice-president in charge of the company's radio division by the board of directors May 11. **Mr. Lack** became Director of ANEPA when it was organized in Nov. 1, 1942, and left that post last week.

•

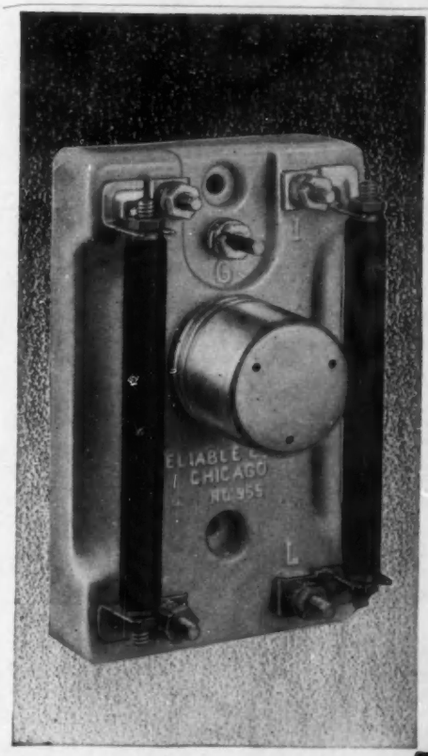
Frank Douglas Tellwright, former first vice president of the Pacific Telephone and Telegraph Co. and the youngest man (at the age of 41) to fill that important post with the company which operates in six far Western states, was appointed by the War Department as successor to **Mr. Lack** and the new ANEPA Director. **Mr. Tellwright,** who is an exceptionally capable executive, was granted a leave of absence by the Bell System to serve the government and has been with ANEPA since February 1.



Personnel Changes in Kentucky

Mr. J. M. Hutchinson, district supervisor of the Ashland (Ky.) Home Telephone Company, located at Hazard, has been promoted to district commercial supervisor of the Ashland district and expects to assume his new duties in the very near future. Mr. B. F. Blackburn, formerly of the Citizens Bell Telephone Company, Covington, Kentucky, has been appointed district supervisor of the Hazard district to succeed Mr. Hutchinson.

FOR QUICKER EASIER TRIMMING WORK
use SEYMOUR SMITH TOOLS...
TREE TRIMMERS
POLE SAWS
BRUSH CUTTERS
CABLE CUTTERS
JOINTED TEST-PIKE POLES
A line of tools designed for linemen's use that are standard equipment with the world's largest Utility Companies.
Send for folder and prices of this labor saving equipment.
SEYMOUR SMITH & SON, Inc.
483 Main St., OAKVILLE, CONN.



Request literature and prices TODAY!

PROTECTION plus
***Design Simplicity**

Reliable

No. 955 STATION PROTECTOR

—provides the latest improvements in indoor station protection. Its design simplicity and one-piece construction eliminates the need for asbestos mats and facilitates mounting. Base is low absorption porcelain. Reliable self-cleaning discharge blocks drain static discharges without leaving line grounded. Fuse clips and binding posts are treated to prevent season cracking and to retard corrosion. Available with No. 55 or No. 77 fuses as specified. Approved by fire Underwriters laboratories.

Reliable ELECTRIC COMPANY
OVER 30 YEARS SERVICE TO THE UTILITIES
3145 CARROLL AVENUE CHICAGO ILL.

★ ★ ★ ★ ★ ★

NATIONAL DEFENSE

★ ★ ★ ★ ★ ★

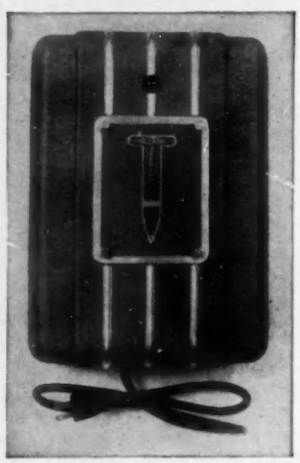
has

PRIORITY

While "all-out" National Defense co-operation is taxing our production facilities — We are proud we have been able to continue to make satisfactory deliveries to our government and to our customers in the telephone field.

TELERING

Reliable ringing service is essential in providing satisfactory telephone service.



Directly converts Commercial Alternating Current to Telephone Ringing Current—Current Consumption Negligible—Positively NO radio interference.

Use TELERING and provide the MOST reliable service at the LEAST cost.

Order through your jobber or direct from

TELKOR, Inc.
ELYRIA, OHIO

Ohio Company Tells Story In Newspaper Advertisement

Praise To Telephone Operators

Frances Troy Northcross, a columnist who writes for the Washington Times-Herald, recently paid tribute to telephone operators everywhere.

"I want to say that of all the people in the world, the telephone girl has it all over every other public servant for patience, sweetness, evenness of temper, and universal courtesy. Ladies and gentlemen, that hard-working girl is ever at your service, through weather that scorches or freezes, through disaster and panic; she stands ready to serve you with a smile in her voice, and a willingness in her heart. All praise to her."

Reprinted From
"Telephone Engineer"

The Ashtabula Telephone Company

Reproduced advertisement appearing in the Ashtabula (Ohio) Star Beacon of May 24th.

An editorial item in our May issue quoting the tribute a columnist of Washington, D. C. passed to operators served as the body copy of an advertisement of the Ashtabula (Ohio) Telephone Company according to a letter from J. D. Bonnar, manager of the company.

Mr. Bonnar in his letter to TELEPHONE ENGINEER said "We took the liberty of using material from the May issue of TELEPHONE ENGINEER, as you will see from the enclosed clipping. The writer seemed to express so well what we considered an excellent tribute to our telephone operators, so we used it as copy for our ad, published in the Ashtabula Star Beacon of May 24th."

Ohio Association Sponsors Four Signal Corps Units

The Ohio Independent Telephone Association, through its Secretary-Treasurer Frank L. McKinney, has sponsored four Affiliated Units of the Army Signal Corp for the benefit of the employees of all Independent telephone companies, Colonel William C. Henry, Chief Engineer of the Signal Corps' Army Communications Division and USITA Vice President, has informed all State Independent Associations and USITA member companies.

The four units, which are a part of the 1943 Troop Plan, are the 156th and 157th Signal Company, Service Group, and 1361st and 1362nd Signal Company, Wing all for duty with the Army Air Forces.

In the 1942 Troop Plan, Col. Henry reported a number of Independent companies and State Associations last year sponsored 19 Affiliated Signal Corps Units. Mr. McKinney was extremely successful in furnishing the complete cadre of officers and technicians for the 39th Signal Construction Battalion. Because of his ability and experience in this work he has agreed to act as sponsor for these four 1943 units for the entire Independent industry.

What Some Editors Say

From the Cincinnati Post:

"The telephone company had an advertisement in The Post the other day . . . 'This is serious,' it said. 'People talking longer . . . Daytime calls in residential areas are averaging 15 per cent longer than in peacetime. And they're actually twice the length of downtown business messages."

"Everybody knew whom the telephone company meant. The telephone company was feeling too chivalrous to come out plainly and say yes, we mean women. We mean, in fact, your wife.

"That woman! Can't you do something to stop her? The first thing in the morning she's at the telephone, calling up all her friends. And what does she talk about? If she had important communications to give, her talking so much and using up these war-valuable facilities might make some sense. But no!

"She talks about the hired girl and how hard it is to keep hired girls these days; about Mrs. Zilch's daughter becoming engaged and don't you think it's about time that girl had some luck; about Mrs. Crocus' lumbago, pour soul; about Mrs. Parsnip's husband who is out late every night and where do you think he spends his time? Such trivia.

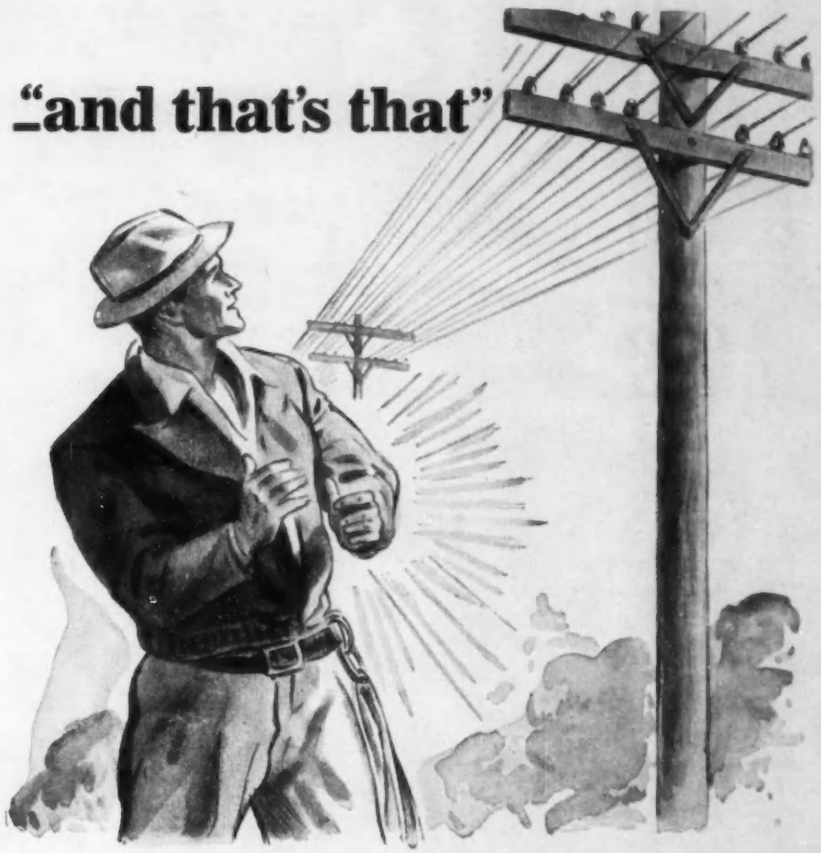
"Can't you stop her, sir? We need the telephone to help win the war. Please do something to stop her.

"This is the way Cincinnatus interpreted the telephone company's advertisement and he submits it to all gentlemen who are masters of their own households."

Telephone Man Awarded Silver Star Decoration

A former cable splicer in Indianapolis, Benton Lynch, is the first Indiana telephone man to be decorated for outstanding courage during this war. A private in the Signal Corps, serving in North Africa, Lynch was awarded the Silver Star for devotion to duty and gallantry on Feb. 18, 1943, when he engaged in the destruction of communications apparatus and lines in face of a severe attack of enemy artillery, tanks and dive bombers. He completed his mission despite the danger to himself, the citation noted.

"and that's that"



...because he used Amertel

This typical American expression of finality describes exactly how telephone men feel when they string Amertel wire. They know that sound engineering and lasting construction calls for the very qualities offered by Amertel wire or Amerstrand steel strand.

This is true regardless of weather and local conditions for there's an Amertel wire for the longest span or the shortest span . . . for the heavy loading zone and the light loading zone.

And, right now this extra strength and quality that's in every inch of every type of Amertel is more important than ever. It helps do away with repairs, replacements and service calls. Because it does it helps save steel, machinery, manpower and rubber.

USS Amertel TELEPHONE AND TELEGRAPH WIRE AMERICAN STEEL & WIRE COMPANY

DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET . CHICAGO, ILLINOIS

IMPROVE PARTY LINES

ELIMINATE NOISE
with the
Improved RTC-2 VINCENT
RARE GAS RELAY
for harmonic or coded bells

Dual purpose device which economically improves both ringing and transmission on party lines.

NO MOVING PARTS.
Fully Guaranteed.
Can be installed in a minute

Write for Catalog 39-A describing
Non-Grounding Rare Gas Arresters
Terminal Strips • Potheads • Housings

L. S. BRACH Mfg. Corp.
55-63 Dickerson St. Newark, N. J.
Signal Circuit Engineers Since 1906

Army-Navy "E" Award To Hubbard & Company

On April 27th, 1943 Hubbard and Company, Pittsburgh, was honored by the bestowal of two stars for their Army-Navy production of war materials.

Joseph V. Smith, (on the speakers rostrum) Executive Vice President of Hubbard and Company was Master of ceremonies and the "two star" Army-Navy 'E' pennant was accepted for the company by John W. Hubbard, Chairman of the Board who appears at extreme right on the platform.

Principal speakers were Rev. Dr. Francis A. Cox, Lieut. Commander E. W. McKinley (USN Ret.) Colonel Herbert D. Vogel, Major Wm. F. Schwerin, Wm. J. Hart, C. L. Peirce, Jr. and Edward O. Tabor, Esq.

Holds Annual Meeting

The Annual Meeting of the Stockholders of Gulf States Telephone Company was held May 11, 1943 in the office of the Company, 120 South College Avenue, Tyler, Texas.

The following Directors were elected for the ensuing year:

Oscar Burton, P. T. Cole, S. A. Lindsey, Louise Lindsey Merrick, John F. Merrick, Robert Spence, and Gus F. Taylor.

Following the Stockholders' Meeting the Directors met and elected the following officers:

S. A. Lindsey, president; Oscar Burton, vice president and general manager; John F. Merrick, vice president; C. W. Jacobs, secretary; G. N. Ogletree, treasurer and assistant secretary; and Edythe Rafferty, assistant treasurer.

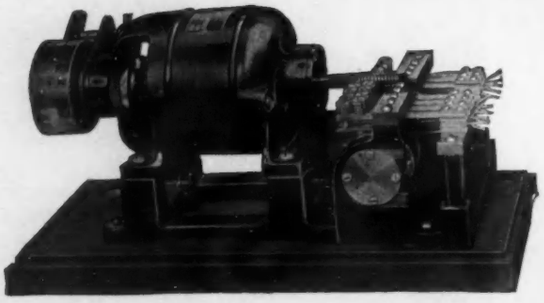
The following excerpts are taken from the Annual Report:

"Taxes continue as an important item in the overall cost of doing business. No one is complaining about the situation because our first effort is to win the war, with the hope and expectation that we will have the opportunity to rebuild the business on an economic foundation established upon an enduring peace. We deem it appropriate, however, to remind the Stockholders that at the end of the prosperous "twenties" only seven (7c) cents of each dollar of gross income was required to pay all direct taxes. By January 1, 1943 twenty-two and one-half (22½c) cents of each dollar of gross income was required to pay direct taxes. Expressed in dollars and cents, our annual direct tax bill for 1928 was $3.14 per telephone in service; for 1942 $11.87 per telephone in service. This increase of over 270% is more striking when it is remembered that it applies to direct taxes only. We have no way of identifying and computing the burden of hidden taxes which affect most, if not all, of our purchases.

"We are continuing to install telephones for all applicants for service in most of the exchanges where we have idle facilities.

Let HOLTZER-CABOT *Engineers*
help solve your ringing problems

MOTOR-DRIVEN INTERRUPTER



★
Holtzer-Cabot complete motor driven interrupter equipment combines a method of producing good signaling tones with a means for automatic ringing.
★

features

1. Eliminates slow acting relays
2. Reduces maintenance
3. Gives positive timing
4. SIMPLE and DEPENDABLE

For complete information, Write
THE HOLTZER-CABOT ELECTRIC CO.
125 Amory St., Boston, Massachusetts 6161 So. State St., Chicago, Ill.

C. J. Milroth

George Sowash

Copperweld Names Milroth

C. J. Milroth succeeds George Sowash, formerly Assistant Advertising Manager of the Copperweld Steel Company, Glassport, Pennsylvania, who was granted an indefinite leave of absence to enter the Army. Mr. Sowash expects to enter the Volunteer Officer's Candidate School in the Signal Corps.

Mr. Milroth spent approximately two years in the Mill Production Office prior to his coming into the Advertising Department.

Retires from Chance Co.

Miss Ida Lou Traughber

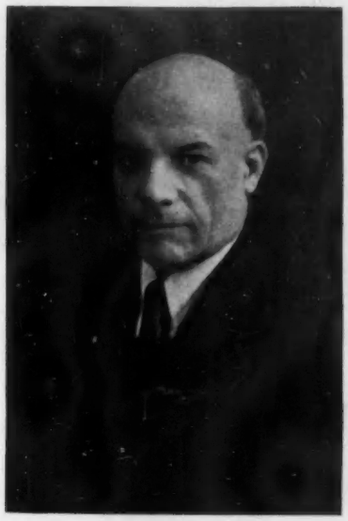
Miss Ida Lou Traughber, known to many in the electrical field as an executive of the A. B. Chance Company, recently resigned her position as Treasurer of this company after 33 years of service.

Miss Traughber's retirement ended an active and successful career which started in 1910, only three years after A. B. Chance started the business which has since developed into one of the leading industries in the service of public utilities.

Miss Traughber will leave her home in Centralia, Missouri, to live with her sister in California.

Tells of Far East Experiences

Drawing on twenty years of experience among the people of Japan, Siberia, China and the Netherlands East Indies, Mr. Harry S. Janes, of the engineering staff of Automatic Electric Company, has been giving interested audiences a vivid picture of life in that area and an insight into the peculiar and dangerous psychology of our far Eastern enemy, Japan.



Harry S. Janes

On March 31, on the invitation of Mr. Verne B. Clark, district manager of the Middle States Telephone Company, Mr. Janes gave a address before the Rotary Club at Pekin, Illinois. Again, on April 15, at the invitation of Mr. Richard Cole, general superintendent of the Illinois Valley Telephone Company, he gave a similar address before the Parent-Teachers Association at Streator, Illinois. Members of both audiences agreed that Mr. Janes' first hand information presented an intimate close-up of the Japanese viewpoint and a graphic picture of what we have to do—and why we must do it—before it will be possible to resume peaceful relations in the Far East.

At the outbreak of World War II, Mr. Janes was Automatic Electric Company's representative in the Netherlands East Indies. In October, 1941, he left his office in Java. Pearl Harbor caught him on the open sea, and he eventually found himself in a convoy bound for the United States. His experiences in the Far East date from 1917, and include five years in Tokyo as well as travel in China, Manchuria, Java, Sumatra, Borneo and the Philippines.

Because of his intimate contact with the people of Japan and other Far

Place It In All Community Centers

Install this Gray Prepayment Pay Station in all your population centers—in the community hall, the leading garages, drug and grocery stores—wherever it will be within easy reach of the thousands who can not get new equipment due to the war. It is the simple way to meet this war need, at the same time a satisfying answer to the growing need for greater revenue.

150G is suitable for dial or manual service. Where special central office switching equipment is available, this pay station can be arranged for machine switching service requiring no operator for local connections. In the manual type, a card holder is substituted for the dial. Circuit is anti-sidetone. Complete details on request.

AUTHORIZED AGENTS:
American Automatic Electric Sales Co.
Graybar Electric Company
Kellogg Switchboard & Supply Company
Leich Sales Corporation
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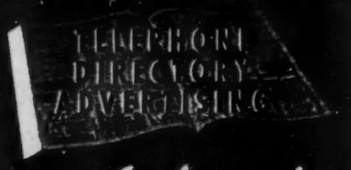

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East places whose names are headline news today, Mr. Janes is well qualified to give a realistic presentation of the problems which confront us in the Pacific, and in particular those which are brought about by the ideologies in which the Japanese are trained from childhood.

I.T.&T. Re-Elects Directors

At the annual meeting of the Stockholders of the International Telephone and Telegraph Corporation held in Baltimore, Md., May 26 all directors were re-elected as follows: Arthur M. Anderson, Sosthenes Behn, F. Wilder Bellamy, Fred T. Caldwell, John W. Cutler, Charles E. Dunlap, James E. Fullam, Boies Hart, John L. Merrill, Luke McNamee, Walter E. Ogilvie, Henry B. Orde, Frank C. Page, Bradley W. Palmer, Henry M. Pease, Frank W. Phelan, Warren Lee Pierson, George E. Pingree, Wolcott H. Pitkin, Lewis J. Proctor, Henry C. Roemer, Kenneth E. Stockton and Mark A. Sunstrom. Arthur Anderson & Co. were appointed auditors for the ensuing year.

Automatic Awarded Second Star On Army-Navy "E" Pennant

Automatic Electric Company, Chicago, has been granted a renewal of its Army-Navy "E" Award for excellence in industrial production for an additional six months period dating from May 15, 1943. The original award was conferred in May, 1942, and this second renewal carries with it the privilege of flying the Army-Navy "E" pennant with two stars affixed.

In a letter addressed to P. W. Conrad, president of Automatic Electric Company, Admiral C. C. Bloch, USN (Ret.), chairman, Navy Board for Production Awards, writes as follows:

"The men and women of the Automatic Electric Company have achieved a signal honor by continuing their splendid production in such volume as to justify this renewal of their award. In the first instance it was difficult to win the Army-Navy 'E' and by meriting a second renewal, the management and employees have indicated their solid determination and ability to support our fighting forces by supplying the equipment which is necessary for ultimate victory."

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New York Convention Report

(Continued from page 25)

with you than by temporarily receiving higher pay in another industry. The older employees from the point of service, know that continuity of employment and a fair measure of security, is what counts over a period of time and not spasmodic large pay checks, and in the interim, none at all. It might be well for those independent companies who can see their way clear to do so, to adopt a pension system as a further means of security for their employees."

K. T. Dutschmann (back to camera), H. H. Griswold, Phelps, S. N. Vines, Syracuse, W. A. Seely, Norwich and R. W. Simmons talk over a paper delivered during the New York convention. In white background appears A. J. Bohnsack of Germantown, N. Y.

Mr. Meyer was well pleased with the progress made by the industry and the association during our wartime activities and in his address passed compliments to this and the other publication serving the industry.

The closing speaker was Dr. David Friday of Washington, D. C. Dr. Friday is well known to the Independent telephone industry as he has appeared as featured speaker at several national telephone conventions in Chicago. As an economist he is one of the most renowned in our country. His message was a thought provoker and one of the highlights of the convention. As Dr. Friday did not speak from notes we cannot bring you excerpts from his talk.

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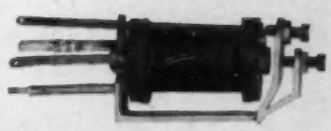

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